United States Department of Agriculture

Forest Service

June 2021

Environmental Assessment

Deadman Corners

Marienville Ranger District, Allegheny National Forest

Forest County, Pennsylvania

West Branch Bluejay Creek, photo taken by Dan Tollini, Wildlife Biologist

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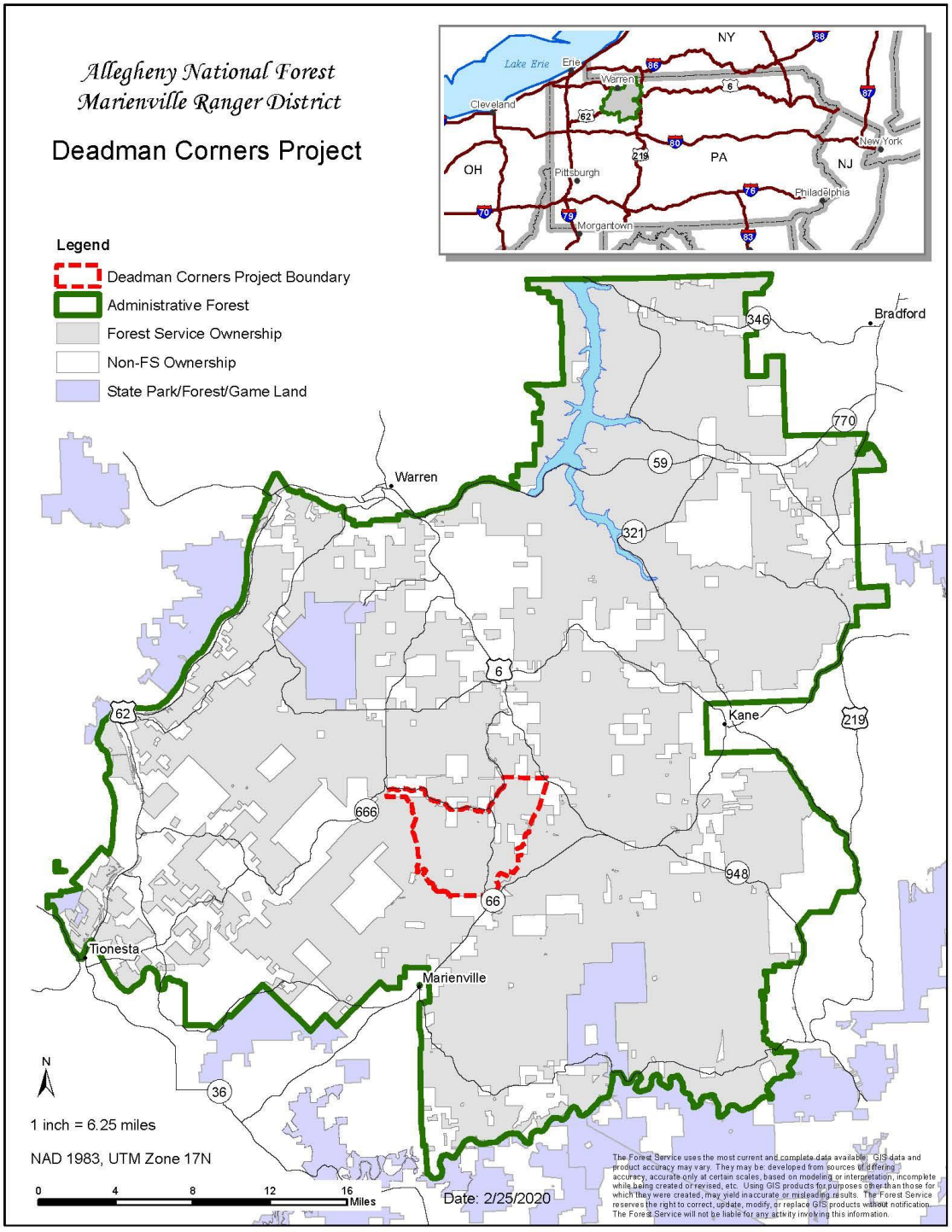
INTRODUCTION

The Forest Service, U. S. Department of Agriculture, Allegheny National Forest, Marienville Ranger District, is proposing vegetation management, reforestation treatments, non-native invasive plant treatments, watershed improvements, recreation improvements, and travel management activities in Warrants Godfrey, Charles Fox, 2736, 2812, 2850, 2878, 2882, 2916, 2960, 2980, 2993, 2995, 3186, 3187, 3188, 3188, 3189, 3192, 3193, 3802, 3803, and 4545 in Howe Township, Forest County, Pennsylvania. The project area is generally located north of Marienville, Pennsylvania and is located within the Upper Tionesta Creek (primarily), South Branch Tionesta Creek, and Spring Creek watersheds. The project area consists of approximately 15,218 acres of National Forest System lands with approximately 4,467 acres in Management Area 2.2 (late structural linkages) and 10,751 in Management Area 3.0 (even-aged management) (see vicinity map below and map 1: existing condition).

We prepared this environmental assessment to determine whether to prepare an environmental impact statement or a finding of no significant impact.[1]

[1] This environmental assessment was prepared in accordance with the 2020 version of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act.


Allegheny National Forest
Marienville Ranger District
Deadman Corners Project
Legend
Deadman Corners Project Boundary
Administrative Forest
Forest Service Ownership
Non-FS Ownership
State Park/Forest/Game Land
Lake Erie
Erie
Warren
Cleveland
NY
OH
PA
NJ
Pittsburgh
New York
Philadelphia
Morgantown
Bradford
Kane
Tionesta
Marienville
346
770
59
321
6
62
219
666
66
948
36
N
1 inch = 6.25 miles
NAD 1983, UTM Zone 17N
0 4 8 12 16 Miles
Date: 2/25/2020
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NEED FOR ACTION

Vegetation Management for Early Structural Habitat

We are falling short of our objective to provide diverse wildlife habitat on the Allegheny National Forest. We would like to maintain early structural habitat[2] on 8 percent of the forest, with that number increasing to 10 percent by 2060.[3] As of January 2020, we only have an estimated 3.1 percent of early structural habitat across the forest. It may be possible to achieve this objective in the short-term by implementing all our recently approved and proposed vegetation management activities. However, it can take more than a decade to fully implement a decision, and trees are continuously growing out of the early structural habitat age class. As a result, we need to approve new activities to help overcome our current deficit and compensate for trees that will age into mid-structural habitat over time. If we do not, the forest will continue to grow older and wildlife habitat diversity will decline.

Vegetation Management for Forest Health

The number of healthy seed trees is declining due to a combination of forest health challenges. One measure of forest stand health is the overstory tree stocking within the site's available growing space, expressed as relative density. For a stand to be considered as fully occupying a site's available growing space, the relative density must be 44 percent or more. Unfortunately, we have found that stocking levels in many stands within the project area are on a negative trend. This makes it increasingly difficult to maintain and regenerate stands comprised of desirable species. We must act now to sustain healthy and well stocked stands while adequate seed trees remain before we lose what we have to insects, disease, windthrow, storms, and other injury to tree crowns.

Forest health challenges within the project area include, but are not limited to, the following:

- **Beech bark disease** results in the death of mature American beech stems. A dense thicket of beech sprouts, or beech brush, is produced from the root stocks of the original trees. This prevents the establishment of other tree seedlings and results in a monoculture of beech that lacks the benefits of natural forest biodiversity and is susceptible to beech bark disease.
- **Emerald ash borer** has already killed most of the ash trees within the project area and the Allegheny National Forest.
- **Hemlock woolly adelgid** is expected to cause high mortality levels to eastern hemlock in the coming decades.
- **Black cherry crown health** has been declining in many areas for reasons that are not entirely clear.[4] The percentage of standing dead black cherry on selected plots

[2] Early structural habitat is defined as "Seedling and sapling communities or forested stands normally less than 20 years old where the dominant canopy layer is less than 5 inches in diameter(dbh). Savannahs or open areas with encroaching woody vegetation where tree cover or canopy closure is less than 40 percent are also considered to be early structural habitat."

[3] Provide a diversity of age and structural classes across the Allegheny National Forest landscape, including early structural, late structural, and multi-age forested conditions, to achieve desired future conditions (USDA-FS 2007a, page 19).

[4] We think it is linked to several factors including insect defoliations, other canopy disturbances such as wind events, changing soil nutrient status, and potentially changing climate and weather patterns.

increased to 22 percent in recent years,[5] and in some areas may exceed 30 percent.[6] Cherry scallop shell moth is a defoliator of black cherry, and we have experienced five years of an outbreak. Cherry scallop shell moth causes substantial damage to black cherry trees and often mortality, especially when combined with other stressors. Diminishing black cherry health has also led to poor seed crops, low seed viability, and poor seedling survival rate.

- **Interference from non-native invasive plant species** is also a threat to forest health and native plant communities.

Reforestation to Support Desirable Tree Species

We rely on natural seedling development to regenerate stands to desirable tree species. These desirable seedlings are outcompeted by interfering vegetation due to decades of selective deer browsing. Desirable tree seedlings will not develop in sufficient quantities to establish a new stand of trees unless we take action to reduce interfering understory vegetation. Deferring action will likely increase the difficulty of successfully restocking these stands with diverse tree seedlings that would help ensure a more resilient forest in the future.

Improving Wildlife Habitat

Non-native insects and disease, natural disturbances, and selective deer browsing are causing changes to the diversity of native trees and shrubs. We are particularly concerned with the potential loss of conifer cover due to the decline of eastern hemlock. Management action is needed to provide new conifer cover should hemlock decline in the future and to enhance wildlife habitat throughout the project area.

Increasing Native Plant Species

Non-native invasive plant species are becoming established in the project area. These non-native invasive plant species are crowding out native plants and affecting wildlife habitat. Action is needed to reduce and limit the spread of non-native plant species, with the hope of maintaining and re-establishing native plants. If we don't take action, non-native plant infestations will continue to persist and spread.

Improving Stream Habitat

Many streams in the project area lack habitat diversity. Pools and slow water habitat are present but lack cover and are generally shallow. Streams lack enough large wood to establish quality pools, slow flood flows, or store sediment and organic materials. Many riparian corridors lack adequate vegetation to provide shade and a supply of large wood in the future.

Also, where Forest System roads cross streams or are located within 300 feet of streams or wetlands, sediment may be introduced to streams or wetlands and there may be barriers to the passage of aquatic organisms, thus reducing aquatic habitat quality and connectivity. Combined, these factors impair instream habitat and recreational experiences for anglers.

[5] Long and others, personal communication 2015 unpublished; Pennsylvania Bureau of Forestry 2015 unpublished.
[6] Pennsylvania Bureau of Forestry 2015 unpublished.

Where Forest System roads must cross streams or are located within 300 feet of streams or wetlands, we propose road maintenance that reduces impacts to water quality. This includes replacing crossings that are constricting flow or restricting aquatic organism passage with structures that provide for non-constricted bankfull water flow and utilize or mimic the stream bed to allow aquatic organism passage. These are typically open-bottom culverts or embedded arch culverts.

Improving Soil Conditions and Water Quality

Approximately 0.7 miles of road (forest road 223B) in the project area are no longer needed. Decommissioning this road would reduce potential soil erosion and restore aquatic and terrestrial habitat.

Acid rain occurs in the project area and negatively impacts the water quality of streams that lack buffering capacity, particularly from road surface runoff. Addition of limestone surfacing in proximity to streams would aid in neutralizing runoff and improve water quality.

Transportation Management

Many proposed treatment units within the project area are not accessible from National Forest System roads or are only accessible from roads that need maintenance to support timber hauling.

Illegal use by ATVs and off-highway vehicles by the public on Forest System roads increases maintenance costs and resource impacts. This illegal use has even greater resource impact when it occurs across the general landscape, but the impact on Forest System roads has a direct correlation to the increased cost of road maintenance, particularly on roads closed to the public. There is another added cost to road maintenance when closed roads are opened for hunter access during the fall and early winter. This cost is often offset by the benefit to forest regeneration from increased hunting pressure on deer.

PROPOSED ACTION

The proposed action was developed by the interdisciplinary team and responsible official to respond to the purpose and need. It is summarized below in table 1, with additional information provided in appendix A (description of treatment methods and list of treatments by stand) and shown on maps 2 through 7.

Table 1: Summary of proposed activities

Even-aged Vegetation Management (acres)	
Commercial thinning	14
Shelterwood seed cut (1st entry)/shelterwood removal (2nd entry)	481
Overstory removal (1st entry)	18
Noncommercial thinning/overstory removal	32
Delayed overstory removal (2nd entry)	540
Two-aged Vegetation Management (acres)	
Two-aged seed cut (1st entry)/two-aged removal (2nd entry)	74
Two-aged removal (1st entry)	816
Delayed two-aged removal (2nd entry)	1,144
Uneven-aged Vegetation Management (acres)	
Single tree selection (1st entry)/group selection (2nd entry)	374
Understory Vegetation Treatments (acres)	
Herbicide–reforestation	3,761
Site preparation	3,761
Fence construction (optional)	3,492
Tree shelter installation (optional)	893
Tree planting for species diversity	915
Release for species diversity	3,761
Non-native invasive plant species treatments (herbicide and manual)	200
Wildlife Management	
Planting (acres)	21
Fencing (acres)	20
Structure installation (number)	30
Brush pile construction (number)	96
White pine release	35
Rehabilitate wildlife openings (acres)	15
Watershed Management (miles)	
Large wood introductions (place in streams - up to 160 trees/mile)	23.3
Travel Management (miles)	
Road construction – new corridor	1.2
Road construction – existing corridor	5.5
Road decommissioning	0.7
Road maintenance	41
High quality (limestone) road surfacing (within 300 feet of a stream)	11.2
Road management change from closed to open (forest road 218A)	0.5
Install new gates (forest roads 128L, 219, 218A (move), 223C, and 223D) (number)	5
Replace undersize culverts to provide for aquatic organism passage (number)	6

PUBLIC INVOLVEMENT

The scoping period for the Deadman Corners project began on January 19, 2021 when a legal notice for the scoping period was published in *The Kane Republican* and the scoping package was mailed to interested individuals and organizations, including adjacent landowners, special use permittees, and subsurface mineral owners. The scoping package was also posted on the Allegheny National Forest website on January 19, 2021. The project was listed in the Allegheny National Forest schedule of proposed actions (SOPA) starting with the January 2021 issue. An errata and revised scoping proposal were posted to the Allegheny National Forest website on February 3, 2021. The scoping comment period for this project ended on February 19, 2021. Three organizations (Allegheny Forest Alliance, Warren County School District, and Forest County School District) submitted supportive comments during the scoping period.

The respondents' comments are included in the project file. No issues were identified by the interdisciplinary team or responsible official that led to formulation of another action alternative.

ALTERNATIVES

For an environmental assessment, alternatives to the proposed action must be developed if there are unresolved conflicts concerning alternative uses of available resources. No unresolved conflicts were identified during scoping or interdisciplinary review. As a result, this environmental assessment discusses two alternatives for moving forward: no action and proposed action.

No action

Under the no action alternative, none of the proposed activities would be implemented. Activities previously approved in other NEPA decisions would still occur. A list of recent NEPA decisions within the project area is provided below, and the remaining activities to implement are summarized in table 2.

- East Side Final Environmental Impact Statement (2000)
- FY06 Regeneration Environmental Assessment (2006)
- FY07 Regeneration Environmental Assessment (2009)
- Apple Tree Prune and Release Categorical Exclusion (2009)
- Aspen Regeneration Categorical Exclusion (2013)
- Marienville Buckthorn Treatment (2016)

Routine road, trail, and other facility maintenance would occur as funding permits.

Table 2–Management activities approved in previous NEPA decisions and still to be implemented

Previously approved activities	
Shelterwood removal cuts (acres)	36
Tree planting for species diversity (acres)	25
Release for species diversity	56
Aspen regeneration (acres)	1
Apple tree pruning and release (acres)	25
Glossy buckthorn treatment (acres)[1]	500 to 1000 annually[2]

[1] *Dependent of funding and available resources.*
[2] *Across the Marienville Ranger District*

Alternatives considered but eliminated from detailed study

The interdisciplinary team and the responsible official considered the possibility of restricting temporary opening size to 40 acres or less and then revisiting the untreated areas in the future (after adjacent treated stands are restocked). This approach, however, is not viable since tree mortality would occur well before adjacent areas are restocked. It may take 10-15 years for treated stands to reach 15 feet tall. This gap between mortality and adjacent stand restocking, when combined with overstory decline and mortality from other factors would substantially jeopardize our ability to naturally regenerate stands. Active management in the future, moreover, could be further challenged if mortality reduces the economic value of timber to the point where sales are no longer commercially viable. Although economics is not a determinative factor in this case, it is worth mentioning since the forest largely relies on commercially viable timber sales to help achieve desired conditions.

We also considered the possibility of salvaging dead and dying trees in these stands. This approach, however, is not prudent since stand health would continue to decline. Without even-aged regeneration treatments and reforestation activities, stand stocking, tree species and understory diversity would continue to decline and our ability to naturally regenerate a younger cohort of diverse, hardwood species would be jeopardized. The result would be a two-aged community, consisting of a poorly stocked overstory and an understory dominated by undesirable vegetation. Although this approach may work in some instances, the chances of it being successful are uncertain and would vary substantially depending on site conditions.

Since restricting openings to 40 acres or less would have negative consequences that jeopardize stand health and regeneration ability and the alternative management approaches considered are either not viable or not prudent, we believe moving forward with openings that exceed 40 acres is most likely to improve forest health and resilience. Further, the size of the opening is not the objective, it is a tool to reach the objective, which is regeneration of healthy, diverse forest stands. It is not our intent to create openings up to 350 acres in size (see table A-1 in appendix A), but this may occur when the stand dynamics present us with diminishing opportunities for regeneration. With this project, we have strived to balance the regeneration of relatively healthy stands within our normal parameters of size and timing of treatments, with the regeneration of diminished stands within parameters that offer greater flexibility for size and timing of treatments.

ENVIRONMENTAL EFFECTS

The purpose of an environmental assessment is to determine whether to make a finding of no significant impact or prepare an environmental impact statement. To help inform that decision, our analysis is presented in terms of potential affected environment.

Introduction

This project addresses a relatively limited portion of the landscape when viewed from local, regional, and national perspectives. It proposes treatments on approximately 4,000 acres,[7] which represents:

- 1.1 percent of lands within the South Branch Tionesta Creek, Bluejay Creek, Lower Sheriff Run, Minister Creek, Salmon Creek, East Branch Spring Creek subwatersheds
- 1.45 percent of lands within Forest County
- 0.78 percent of land within the proclamation boundary of the Allegheny National Forest
- 0.002 percent of land administered by the U.S. Forest Service (nationwide) as part of the National Forest System

This project was designed to help achieve desired conditions identified in the Allegheny National Forest Land and Resource Management Plan (Forest Plan). It is located within 2.2 (late structural linkages),[8] and 3.0 (even-aged management).[9] All applicable standards and guidelines have been incorporated into the proposed action as well as project design features (see appendix B), and implementation will help us achieve the following goals and objectives:

- Develop and enhance the seedling, shrub, and herbaceous diversity to improve structural conditions (USDA-FS 2007a, pages. 14, 19, A-1, A-2, and A-14). Provide a diversity of vegetation patterns across the landscape that represents well distributed habitats, a range of forest age classes and vegetative stages, a variety of healthy functioning vegetation layers, moderate to well-stocked forest cover, and the variety of vegetation species or forest types necessary to achieve multiple resource objectives and sustain ecosystem health (USDA-FS 2007a, page 14).
- Continue to implement and monitor a range of silvicultural and reforestation practices in order to be responsive to emerging issues and regenerate stands to a diversity of tree seedlings of good quality, form, and health (USDA-FS 2007a, page 14).
- Improve the overall health and sustainability of Allegheny National Forest ecosystems by reducing understory dominance of native invasive species such as

[7] Please note that multiple treatments might occur on any given acre.

[8] **Management Area 2.2 – Late Structural Linkages** emphasizes older, late structural forests that link relatively large areas of older forests (core areas) across the landscape. Vegetation management is directed to restoring late structural forest conditions with an emphasis on sustaining forest structure and forest continuity. Management Area direction is provided on pages 109–112 of the Forest Plan.

[9] **Management Area 3.0 – Even-aged Management** emphasizes even-aged management to provide a forest that is a mix of predominantly shade intolerant and mid-tolerant hardwood stands of various ages and associated understories and habitat for a diversity of plant and animal species. Management Area direction can be found on pages 113–115 of the Forest Plan.

beech brush, ferns, grass and striped maple, and non-native invasive species on 3,000 to 6,200 acres annually. Do this through direct treatments: site preparation, herbicide application, scarification, mechanical treatment, or fencing to encourage greater species diversity with a wider variety of herbaceous and woody plants or tree seedlings (USDA-FS 2007a, page 21).

- Provide a long-term, sustainable supply of large wood from riparian corridors to streams for aquatic habitat diversity; with an objective of 75 to 380 pieces per stream mile (USDA-FS 2007a, page 11).
- Provide a safe, efficient and economical transportation system that is responsive to public and administrative needs, while having minimal adverse effects on the natural forest ecosystem (USDA-FS 2007a, page 16).
- Limit the further introduction and spread of non-native invasive plants and conserve forest resources in a manner that presents the least hazard to humans and maintains and restores forest resources (USDA-FS 2007a, page13).
- Maintain or restore watersheds and their associated stream and groundwater processes, channel stability, riparian resources, and aquatic habitats to a functional condition (USDA-FS 2007a, page 14).
- Provide a sustainable flow of commercial timber products that will contribute to the local and regional economy, contribute to the annual forest-wide allowable sale quantity, and maintain 10 to 12 percent of MA 3.0 in early structural habitat (0 to 20 years old) over time (USDA-FS 2007a, pages 8, 14, and 113).

Degree of Effects

Short- and long-term effects are discussed below, and additional information regarding potential effects resolved through project design may be found in appendix C.

Age Class Distribution

The Forest Plan includes objectives for a mixture of early, mid, and late structural habitat across the Allegheny National Forest. The desired age class distribution is described on page 19 of the Forest Plan (USDA-FS 2007a), which is incorporated by reference. To determine how this project helps achieve those objectives, we look at how many acres of early structural habitat would be established in the project area after implementation is complete (for this project, we expect implementation to be complete in 2041). The results of our analysis are summarized below in table 3.

Table 3– Projected structural classes of vegetation on National Forest System lands within the project area

Structural Condition[1]	Year					
	2020		2040			
	Existing Condition		No Action		Proposed Action	
	Acres	Percent	Acres	Percent	Acres	Percent
Forest						
Early structural	299	2	36[2]	0	3,141[2]	21
Mid structural	13,282	87	7,258	48	6,598	43
Late structural	1,047	7	7,334	48	4,890	32
Total Forest	14,638	96	14,638	96	14,638	96
Non-Forest[3]	580	4	580	4	580	4

1. Structural classes are described in the Forest Plan Final Environmental Impact Statement (USDA-FS 2007b, page 6-24)
2. Includes vegetation management activities from previous NEPA decisions that have not been implemented.
3. Non-forested land may increase by 164 acres across all age classes as a result of future private oil and gas development.

Vegetation within the project area is relatively uniform in age, structure, and maturity. Approximately 87 percent of the forested land within the project consists of mid-structural habitat (21-110 years old), and 7 percent is late structural habitat (over 111 years old). The remainder, approximately 2 percent, is early structural habitat (0-20 years old).

The proposed action would establish a more balanced age class within the project area—establishing approximately 3,105 acres of early structural habitat over the next 20 years while decreasing current mid-structural habitat by 2,772 acres and late-structural habitat by 333 acres. This would offset the loss of 299 acres of early structural habitat that would occur as stands within the project area age and would help achieve our forest-wide objective for early structural habitat. To achieve forest-wide objectives for early structural habitat (8 to 10 percent of the forested landscape) the Forest needs to sustainably establish and maintain approximately 36,000 acres of early structural habitat, using even-aged regeneration methods. The proposed action would contribute approximately 8.6 percent of the early structural habitat needed. If no action is taken, stands currently in the 0-20 age class will grow out of the 0-20 age class and no longer be considered early structural habitat. This will make it increasingly difficult to achieve the forest-wide objective for early structural habitat and would require an increase in vegetation management elsewhere to compensate.

Fully implementing other approved NEPA decisions would establish an additional 37 acres of early structural habitat over the next 20 years. This would combine with the proposed action to establish a combined 8.7 percent of the early structural habitat needed to achieve and maintain the forest-wide objective. If the no action alternative is selected instead, it would combine with other approved activities to result in a net loss of 263 acres of early structural habitat as stands age over time. This loss would make it increasingly difficult to achieve the forest-wide objective for early structural habitat.

Forest Health and Resilience

The age of a stand is not the only indicator for habitat. Species diversity and structure within the habitat are also key factors, and these are a function of forest health and resilience. Many stands on the Allegheny National Forest are at or below 44 percent healthy relative density.

This is concerning, since as healthy relative density falls, it becomes harder to regenerate these areas to healthy stands of desirable tree species. The effect of project implementation on these stands – and on forest health and resilience – is measured by how many acres of stands in decline are regenerated to increase stocking levels and sustain species diversity. The geographic boundary for our analysis is the project area, and we look at effects over a 20-year timeframe.

The proposed action will regenerate approximately 676 acres of forested stands that are currently at or below 44 percent healthy relative density. Other stands that are trending towards that number (or lower) are also proposed for regeneration. This will improve species and age class diversity, resilience, and vigor, and reduce the overall risk of catastrophic damage due to insects, diseases, and other natural events. Horizontal and vertical diversity of vegetation would be also enhanced across the project area.

If no action is taken, stands that are currently below or trending below 44 percent healthy relative density would continue to decline. They would become less diverse and stocked, and more susceptible to insects, disease, and other forest health challenges. Canopy gaps resulting from mortality would continue to occur in stands with a component of unhealthy overstory trees. Gaps would be patchy, filled by a multitude of species, including birch, along with undesired invasive species, striped maple, American beech, glossy buckthorn, grass and fern species. Where more American beech component is present in the overstory, the species composition of untreated areas would contain a heavy beech brush component- in some areas a virtual monoculture of perpetual beech brush. This condition would provide little ecological benefit in comparison to a species diverse, early structural environment with potential to develop and mature into middle- and late-structural conditions. In some areas, a red maple component may persist in the understory. The relative abundance of tree species would look very different than that of the current overstory. It would also become more difficult to successfully restock these stands with diverse tree seedlings in the future due to the continued loss of potential seed trees and the increase in competing undesirable vegetation.

Regenerating these areas now would provide the best opportunity for a new generation of healthy, well-stocked and diverse forest stands. Even-aged regeneration success on the Allegheny National Forest is quite good, with 93.5 percent of stands fully stocked within five years of the overstory removal (USDA-FS 2014, page 4). When regenerated areas that are nearly fully restocked are also considered, regeneration success of 98.5 percent (USDA-FS 2014, page 4).

If other recently approved projects are fully implemented, an additional 37 acres within the project area will be regenerated over the next 20 years. This would combine with the proposed action to increase the total number of acres regenerated. If the no action alternative is selected, only 37 acres approved in other NEPA decision would be regenerated.

Threatened and Endangered Species

The Allegheny National Forest is home to six federally threatened or endangered species of freshwater mussels. There are no other aquatic threatened or endangered species. Currently, there is no designated critical habitat for any federally threatened or endangered species on the Allegheny National Forest; therefore, implementation will not affect any designated critical habitat. However, since scoping, a seventh mussel species, the longsolid *(Fusconaia subrotunda)*, has been proposed for federal listing as threatened. Along with the proposed listing is the designation of critical habitat for the longsolid mussel, which would include 99

miles of the Allegheny River. The longsolid is a Regional Forester Sensitive Species but for the purposes of this analysis was included under the biological assessment for this project and a "no effect" determination was reached. Therefore, the proposed action would have no effect on the longsolid mussel or its proposed critical habitat.

Also, since scoping, the U.S. Fish and Wildlife Service has found that adding the monarch butterfly to the list of threatened and endangered species is warranted but precluded by work on higher-priority listing actions. With this decision, the monarch becomes a candidate for listing under the Endangered Species Act and its status will be reviewed each year until it is no longer a candidate. The monarch butterfly was analyzed as a Regional Forester Sensitive Species for this project and a "may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing" determination was reached in the project biological evaluation.

On August 28, 2019, the U. S. Fish and Wildlife Service completed a 5-year review for the Northeastern bulrush. The review recommends that the species be delisted due to recovery. The 5-year review can be found at https://ecos.fws.gov/docs/five_year_review/doc6123.pdf.

Project-specific biological specialist reports (aquatic, botany, and wildlife) were prepared, are available in the project file, and are incorporated by reference. These reports concluded that implementation may affect, and is likely to adversely affect, the northern long-eared bat, which will be protected through Forest Plan standards and guidelines (USDA-FS 2007a, pages 81–82) and project design features (see appendix B). A no effect determination was reached for all other species (small whorled pogonia, northeastern bulrush, northern riffleshell, clubshell, rayed-bean, sheepnose, snuffbox, and rabbitsfoot) for both alternatives.

Although implementation may affect, and is likely to adversely affect, the northern-long eared bat under the proposed action, this project would not jeopardize the continued existence of the species. The primary factor cited in the proposed listing rule responsible for the decline of northern long-eared bat populations is white-nose syndrome. The U.S. Fish and Wildlife Service (2013) determined that although several activities, such as construction of physical barriers at cave accesses, mining, development, and timber harvest may modify or destroy northern long-eared bat habitat, these activities alone do not have significant, population-level effects on the species.

The impact of this project on individuals and habitat is not expected to adversely affect the conservation and recovery efforts for the species for several reasons, including but not limited to the following:

- Forest management and silviculture are vital to the long-term survival and recovery of the northern long-eared bat and the U.S. Fish and Wildlife Service have determined that when the prohibitions for the species included in the final 4(d) rule are applied to forest management activities, the potential impacts would be significantly reduced (USDI-FWS 2016).
- Conducting timber harvest activities or tree removal outside the hibernation period could conceivably result in direct mortality or injury to northern long-eared bat by incidental felling of roost trees, particularly if non-volant bats are present. In areas of extensive intact forest, the likelihood that a given harvest would result in the loss of a maternity colony is small. Suitable habitat, as well as potential maternity roosts and day roosts, are abundant and widely distributed across the project area. Additionally, there are well over 18.9 million potential roost trees on the Allegheny National Forest

(Miles 2015). The likelihood of direct mortality from prescribed fire is extremely low as the proposed burning would occur in early spring or fall. Timber harvest is an important tool that could improve forest structure by creating canopy gaps and snags, by reducing stand density and mid-story clutter, and by increasing forest diversity to maintain suitable roosting and foraging habitat.

- This project would provide protection for the northern long-eared bat during its most sensitive life stages. There are no known occupied maternity roosts in the project area, and there are no activities proposed within ¼ mile of known hibernacula. Should maternity roosts be found in the vicinity of proposed activities in the future, conservation measures will be applied to avoid cutting or destroying them unless they are in immediate safety hazard.

Forest Plan standards and guidelines implemented for Indiana bat (USDA-FS 2007a, pages 81–82, USDI-FWS 2007) will minimize potential harm or harassment to this species and retain key habitat components at the stand and landscape level. If no action is taken, then no effects to the northern long-eared bat are anticipated.

Regional Forester Sensitive Species

Aquatics, botany, and wildlife reports have been prepared for this project. They may be found in the project file and are incorporated by reference.

Aquatic Species

If the proposed action is implemented, 23 regional forester sensitive aquatic species may experience adverse impacts to individuals, but implementation is not likely to result in a loss of viability in the Planning Area nor cause a trend toward federal listing.[10] While some of the impacts of proposed activities may have an adverse effect in individuals, these effects are expected to either be minimal and short-lived or outweighed by the longer term beneficial effects on aquatic species habitat.

If no action is taken, some of those 23 aquatic species may experience adverse impacts to individuals due increased sedimentation and runoff from Forest System roads as they deteriorate, continued elevated levels of sedimentation and runoff from non-system roads that would not be brought into the system and maintained to Forest System road standards, and a longer time period (50 plus years) for large woody debris to repopulate streams resulting in a longer time period for improvements to overall aquatic habitat, but is not likely to result in a loss of viability in the Planning Area nor cause a trend toward federal listing. Additional information is available in the aquatics specialist report and is incorporated by reference.

Plant Species

If the proposed action is implemented, all 24 regional forester sensitive plant species may experience adverse impacts to individuals, but implementation is not likely to result in a loss

[10] Burbot, creek heelsplitter, eastern hellbender, green-faced clubtail, harpoon clubtail, long-solid, Maine snaketail, mocha emerald, mountain brook lamprey, mountain madtom, mustached clubtail, , northern madtom, Ohio lamprey, rainbow, rapids clubtail, round pigtoe, sable clubtail, ski-tipped emerald, spotted darter, threeridge, wabash pigtoe, white heelsplitter, zebra clubtail

of viability in the Planning Area nor cause a trend toward federal listing.[11] The remining 12 regional forester sensitive plant species have no suitable habitat within the project area and there would be no impacts to these species under the proposed action.[12] If no action is taken, then no impacts to any sensitive species are anticipated. Additional information is available in the botany specialist report on pages 10 to 32 and is incorporated by reference.

Wildlife Species

If the proposed action is implemented, 12 regional forester sensitive wildlife species may experience adverse impacts to individuals, but implementation is not likely to result in a loss of viability in the Planning Area nor cause a trend toward federal listing.[13] If no action is taken, then no impacts to these sensitive species are anticipated. Additional information is available in the wildlife specialist report on pages 47 to 56 and is incorporated by reference.

Species with Viability Concerns

Botany and wildlife specialist reports have been prepared for this project to evaluate potential effects to species with viability concerns.[14] They may be found in the project file and are incorporated by reference.

All of our species with viability concerns have suitable habitat within the project area, and five (black-throated blue warbler, cerulean warbler, great blue heron, raven, and red-shouldered hawk) have been documented in the project area. If the proposed action is implemented, no adverse effects to these species are anticipated as Forest Plan standards and guidelines will be applied to protect species during implementation. Slight increases or decreases in potential habitat are expected, but adequate amounts of suitable habitat will remain.

Non-Native Invasive Plant Infestations

Eight non-native invasive plant species[15] have been documented in the project area and occupy approximately 131 acres of National Forest System lands. Additional infestations are likely present. The effects of the proposed action on these species are measured by determining (1) how many acres of land (or miles of road) would experience more favorable growing

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[11] American ginseng, Autumn coralroot, awned sedge, blunt-lobe grapefern, boreal starwort, bristly black currant, butternut, Canada yew, checkered rattlesnake-plantain, creeping snowberry, crippled cranefly, great-spurred violet, Hooker's orchid, lanceleaf moonwort, large toothwort, least moonwort, lesser rattlesnake-plantain, mountain wood fern, queen-of-the-prairie, strict blue-eyed grass, swamp red currant, twining screwstem, white fawnlily, and wild quinine

[12] Bartram shadbush, blazing star/fairywand, blue wild indigo, boreal bog sedge, false Indian plantain, Philadelphia panicgrass, red baneberry, rough cotton sedge, showy orchid, stalked bulrush, thread rush, and tufted hairgrass

[13] Eastern box turtle, eyed brown, four-toed salamander, little brown myotis, monarch butterfly, northern flying squirrel, northern gowhawk, Swainson's thrush, timber rattlesnake, tri-colored bat, West Virginia white, wood turtle

[14] Black-throated blue warbler, cerulean warbler, coal skink, eastern box turtle, golden-winged warbler, great blue heron, Henslow's sparrow, Jefferson salamander, osprey, raven, red-shouldered hawk

[15] **Japanese knotweed (***Polygonum cuspidatum),* **Common tansy** *(Tanacetum vulgare),* **Narrow-leaved cattail** *(Typha angustifolia),* **Multiflora rose** *(Rosa multiflora),* **Autumn olive** *(Elaeagnus umbellate),* **Glossy buckthorn** *(Frangula alnus),* **Common reed** *(Phragmites australis) and* **Japanese barberry** *(Berberis thunbergii)*

conditions for shade intolerant non-native invasive plants and (2) how many acres would be treated to reduce infestations. The project area represents the geographic boundary for our analysis, and we look at effects for approximately 5 to 15 years after implementation occurs.

Proposed Action

Implementing the proposed non-native invasive plant treatments would help to eliminate, reduce, or contain the spread of known infestations in the project area by applying manual, mechanical, and chemical treatments to about 200 acres of infestations. Additional plant species and infestations could be treated if found within the project area during implementation following applicable Forest Plan direction, standards, and guidelines.

Vegetation management (timber harvesting) would temporarily increase the amount of light radiating to the forest floor on 3,493 acres within the project area. This would temporarily improve growing conditions for shade intolerant non-native invasive plants, would last approximately 5-15 years, and would subside as the canopy closes and native vegetation becomes established. Proposed herbicide application on 3,761 acres would help reduce competing vegetation and non-native invasive plant infestations within stand proposed for treatment.

Road construction and maintenance may increase growing conditions for non-native invasive plants along roadways. New road construction may also introduce a new path for non-native invasive plants to access the forest interior. The risks are minor in context of this project with 1.2 miles of proposed new road construction, 5.5 miles of proposed road construction in existing road corridors, and 41 miles of road maintenance. While new construction would create a long-term vector, the effects of increased light along roadways would subside as the canopy closes (in approximately 5 to 15 years). The risk is reduced through several design features (see appendix B) and by our ability to treat new infestations as they are located.

If other approved projects are fully implemented, an additional 37 acres (includes 1 acre of non-commercial aspen regeneration) of vegetation management would likely occur, along with 56 acres of release for species diversity. When combined with the proposed action, these activities would slightly and temporarily improve growing conditions for shade intolerant non-native invasive plants. However, the risk of further spreading infestations is low due to the application of project design features and our ability to treat new infestations as they are located.

No Action

Under the no action alternative, proposed non-native invasive plant treatments would not occur. Existing non-native invasive plant infestations would persist, continue to spread, and potentially diminish or degrade native habitats and populations.

Soil and Water

Soil productivity, erosion and sedimentation, and stream flow are briefly discussed below. Most potential effects to soil and water can be adequately resolved through project design, the application of project design features, and Forest Plan standards and guidelines. Please see appendices B and C and the Forest Plan (USDA-FS 2007a, pages 72–79) for more information.

Soil Productivity

Transportation management would result in a small loss of soil productivity in some areas but provide benefits in others. The proposed action includes approximately 1.2 miles (5.1 acres) of new road construction that would result in long-term losses in soil productivity where soils are removed or buried. This would be offset by 0.7 miles (2.8 acres) of road decommissioning, which would help to restore soil productivity in those areas. If the no action alternative is selected, none of these activities proposed here – road construction and decommissioning – would occur. As a result, soil productivity would remain unchanged.

Soil disturbance associated with commercial harvest and reforestation activities that utilize heavy equipment can result in losses of soil productivity. However, these impacts are temporary, minimized, and/or eliminated through the application of best management practices, project design, project design features, and Forest Plan standards and guidelines.

Erosion and Sedimentation

Under the proposed action, road maintenance may cause a short-term increase in erosion and sedimentation, but an overall reduction in the mid to long-term from the following activities:

- Road maintenance on existing roads (41 miles)
- Adding non-system roads to the National Forest System (5.5 miles)

The likelihood of short-term impacts would be reduced through project design features, Pennsylvania best management practices, and Forest Plan standards and guidelines. Selected design features are listed below, and additional information is provided in appendix B.

- Road maintenance would reduce sedimentation and runoff over the long term.
- Surface armoring (at stream crossings) shall be applied on planned timber haul routes prior to timber hauling.
- When permanent road crossings of perennial or intermittent streams are replaced, new, aquatic organism passage structures will be designed and implemented to maintain aquatic species passage, improve aquatic habitat connectivity, and stream channel stability.
- Routine road maintenance would improve water quality and impacts to the stream flow regime by decreasing runoff into streams (Scheetz and Bloser 2008). Roads will be designed and constructed to avoid directing surface runoff into streams.

Road maintenance is likely to occur at a faster rate under the proposed action because funds would be generated from timber sales to improve road condition.

If no action is taken, then routine road maintenance would occur as funding permits. There would be some improvement to existing Forest System roads and little or no improvement to non-system roads. Roads not receiving maintenance may continue to contribute sediment and increase runoff into streams.

Large wood introduction would improve aquatic habitat diversity, trap sediment, and slow flood flows. The addition of large wood to streams helps establish quality pools, slow flood flows, and store sediment and organic debris. The improvements are important for aquatic organism survival and propagation.

- Restoration of large wood levels would, in the short and long term, directly benefit juvenile and adult fish by creating larger lateral pools for rearing and resting and additional side channel over-wintering habitat.
- Montgomery and others (1995) documented that as the frequency of large wood increased within stream channels, both pool frequency and depth increased.
- In addition to increased pool frequency and depth, restoration of large wood levels benefits adult and juvenile trout by increasing hiding cover and retention of other organics (Cedarholm and others 2000).
- Large wood restoration would also provide roughness elements that would help regulate bed load movement of the stream channel and fine sediment deposition on the flood plain through time.
- Log complexes would also assist in the regulation of water velocity and infiltration of water on floodplains.

Without the addition of large wood, stream improvements and their associated benefits would take substantially longer. Full recovery could take 50 years or more in streams where riparian stands are in good condition and would require even more time in areas where conditions are poor. No additional large wood projects have been previously approved or proposed in the project area.

Stream Flow and Water Quality in Watersheds

Measurable changes in water quantity and stream flow are predicted to occur if timber harvesting reduces the basal area of a watershed by more than 25 percent in a 5-year period. These concerns are evaluated in greater detail in the Forest Plan Final Environmental Impact Statement, which concludes that changes are expected to recover within three to ten years, will be roughly proportional to the percent reduction in basal area, and are most likely to occur in small watersheds.[16] For this evaluation of basal area reduction in watersheds, five years was selected as an appropriate time for reduction of effects. Since at the stage of removal harvests regeneration of younger trees has already begun, effects from these harvests are expected to be decreasing after 5 years. In addition, a study in central Pennsylvania demonstrated that hydrologic recovery takes approximately 4 years (Lynch and Corbett 1990). To resolve potential effects, the following design features will be applied (see appendix B).

- Stagger the implementation of vegetation management treatments to ensure that basal area reduction does not exceed twenty-five percent in any given watershed over a five-year period, either individually from this project or cumulatively from all land management activities.
- To ensure implementation is staggered and treatments do not reduce basal area more than 25 percent over a 5-year period, treatments in the following small watersheds will require advance coordination among timber, hydrology, aquatics, and engineering staffs: Bald Hill Run Unnamed Tributary 1, Bald Hill Run Unnamed Tributary Upper, Hastings Run Tributary 1, Rocky Run Tributary 1, Rocky Run Upper Shed, Tionesta Creek Tributary 2, West Branch Bluejay Creek Tributary 1,

[16] See Forest Plan Final Environmental Impact Statement, pages 3-38, 3-39, 3-44, 3-45, and 3-51, which are incorporated by reference.

West Branch Bluejay Creek Tributary 2, West Branch Bluejay Creek Tributary 3, West Branch Bluejay Creek Tributary 4, West Branch Bluejay Creek Tributary 5, West Branch Bluejay Creek Tributary 7, and West Branch Bluejay Creek Tributary 8 (see map 8) (USDA-FS 2007a, page 74).

The proposed action will combine with the 36 acres of previously approved regenerations harvests and one acre of non-commercial aspen regeneration. No difference in effects is anticipated since the same design features will apply.

If no action is taken, basal area reductions from proposed timber harvesting would not occur and activities will be limited to the 36 acres of previously approved regenerations harvests and one acre of non-commercial aspen regeneration. Water quality and stream flow would be minimally affected since these activities represent less than one percent of the project area.

Wetlands and Riparian Areas

Forest Plan standards and guidelines (USDA-FS 2007a, pages 74–78) will be applied to all Forest Service activities. Minimal impacts are predicted with the implementation of the Forest Plan standards and guidelines, including but not limited to:

- Commercial timber harvest will not occur in riparian areas to protect against erosion and sedimentation and to avoid other equipment impacts to channels. Typically, riparian areas include the area within 100 feet of perennial streams and within 50 feet of intermittent streams.
- Activities will exclude direct impacts to wetlands and will avoid indirect impacts using buffers. Wetlands, springs and seeps will be protected with a 25-foot no activity buffer and a 25 to 100 foot zone from these resources where 50 percent canopy cover would be maintained. Vernal pools will be protected with a 100-foot no activity buffer and a 100 to 200 foot zone where 50 percent canopy cover would be maintained.

Recreation and Scenery

The effect on recreation is evaluated based on potential changes to the recreation opportunity spectrum,[17] scenic integrity, and recreation activity and use patterns. The geographic boundary for this analysis is the project area, and effects are analyzed over a 20-year timeframe.

Scenic integrity is generally moderate to very low throughout much of the project area, with areas of high scenic integrity along state route 666 and Blue Jay Road. Scenic attractiveness is generally considered "common" within the project area, and there are no wide scenic views anywhere in the project area or looking into the project area.

- The proposed action would not result in permanent changes to the recreation opportunity spectrum or recreation opportunities or use patterns because the activities are consistent with a roaded natural experience, and monitoring of effects and active

[17] The recreation opportunity spectrum is a system for classifying different recreation settings, opportunities, and experiences. There are five development levels, divided into a total of seven classes. These classes are described in Table 3-74 on page 3-300 the Forest Plan Final Environmental Impact Statement, which is incorporated by reference.

management will mitigate short-term impacts on these indicators. Therefore, no changes to recreation opportunity spectrum classifications would occur.

- Although short-term visual effects would occur as timber harvesting opens the forest canopy, project design features (appendix B) and Forest Plan standards and guidelines (USDA-FS 2007a, pages 62-64) would ensure that scenic integrity levels are maintained.
- By following project design features (appendix B) and Forest Plan standards and guidelines (USDA-FS 2007a, pages 59–60), effects to dispersed campsites would be minor.
- By following project design features (appendix B) and Forest Plan standards and guidelines (USDA-FS 2007a, pages 60–62), effects to motorized trails (Penoke Bike Trail, proposed Marienville ATV Connector, and Allegheny Snowmobile Loop) would be minor.
- Hunting and fishing opportunities would be temporarily disrupted for safety reasons during periods of equipment use or prescribed fire. Implementation, however, would improve these recreation opportunities in several ways. Greater road access and an increase in early structural habitat would improve hunting opportunities.

Temporary Openings

If the proposed action is implemented, 22 temporary openings greater than 40 acres in size may occur, ranging in size from 42 to 350 acres. Since the proposed regeneration harvests would take place over a 20-year period, the impacts would be dispersed through time and seen as a gradual increase of the openings, which would revegetate and close in as new openings are made. It is also likely that some temporary openings would grow into the next age class as other nearby temporary openings occur. This would provide successive age classes and a transitioning forest scene.

If no action is taken, no new temporary openings greater than 40 acres in size would be created.

Short-Term and Long-Term Effects

It is unlikely that any of the stands for which management activities have been proposed would change the overall landscape character of the project area due to the history of vegetation management within the project area and the proposed activities are similar, if not the same as, to past management. They are compatible with existing scenic integrity levels, as well as with the recreational opportunity spectrum classes and current recreation activities and use patterns. The effects resulting from past, proposed, and reasonably foreseeable future management activities would not exceed the established scenic integrity levels or recreation opportunity spectrum class of the project area, because the distribution of forested stands within the project area would vary little between the no action and implementation of the proposed action (see table 3). The proposed action would increase the amount of early-structural habitat within the next 20 years. The amount of late-structural habitat would increase under both alternatives, with a large increase in the no action alternative. The proportion of non-forest habitat may increase throughout all structural habitat classes, depending on the pace of new private oil and gas development.

Air Quality

The Clean Air Act requires the U.S. Environmental Protection Agency to set National Ambient Air Quality Standards for six criteria pollutants: ground-level ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide, particulate matter ($PM_{2.5}$ and PM_{10}), and lead. The geographic area where the Allegheny National Forest is located is in attainment of the National Ambient Air Quality Standards for all criteria pollutants except for sulfur dioxide. The non-attainment area consists of a portion of Conewango Township, Glade Township, Pleasant Township, and the City of Warren. The activities proposed here are not located within or near the non-attainment area.

The effects of past, present and reasonably foreseeable future federal and non-federal actions are not expected to bring any of the criteria air pollutants currently in attainment to levels that exceed the National Ambient Air Quality Standards, nor are these actions expected to have any noticeable effect on ambient sulfur dioxide levels.

Herbicide Application

Overall risks from the planned use of glyphosate and sulfometuron-methyl are expected to be low (USDA-FS 2007a, page ROD-23). Forest Plan standards and guidelines for herbicide application would be followed (USDA-FS 2007a, pages 54–59) and are based on the human health risk assessment (USDA-FS 2007b, Appendix G) completed for the Forest Plan Final Environmental Impact Statement (USDA-FS 2007b). A more recent human health and ecological risk assessment published in 2011 by Syracuse Environmental Research Associates (SERA 2011) examined potential hazards from use of glyphosate and concluded:

- The preponderance of the available data clearly indicates that the mammalian toxicity of glyphosate is low, and very few specific hazards can be identified.
- Many glyphosate formulations include surfactants, and the toxicity of these surfactants is of equal or greater concern to the risk assessment than is the toxicity of technical grade glyphosate.
- There are obvious, and in many cases substantial, differences among the toxicities of technical grade glyphosate, glyphosate formulations that do not contain a surfactant, and some glyphosate formulations that contain polyoxyethyleneamine surfactants.
- In general, it would be prudent to classify any formulation that contains a polyoxyethyleneamine surfactant as more toxic, except when there is a compelling reason to do otherwise.
- For members of the general public, the only non-accidental exposure scenario of concern is for acute exposure involving the consumption of contaminated vegetation shortly after glyphosate is applied.

The surfactant polyoxyethyleneamine is not used in any of the herbicide formulations proposed for use by the Forest Service on National Forest System lands within the Allegheny National Forest in the proposed action or any other management activities. Appendix A of the Forest Plan (USDA-FS 2007a, pages A-43–A-45) also contains additional information on site selection, herbicide selection, and application methods and rates. Any herbicide used in this project would be registered by the Environmental Protection Agency in full accordance with the Federal Insecticide, Rodenticide Act, as amended. Herbicide use would follow all Environmental Protection Agency and Commonwealth of Pennsylvania pesticide application

regulations and Forest Service handbook and manual direction. Maximum application rates per acre stated in Tables 17 and 18 on page 56 of the Forest Plan would not be exceeded on any acre within any year. Based on monitoring results from previous projects with similar activities, herbicide treatments are anticipated to have negligible effects to public health or safety (USDA-FS 2008, pages 28–33).

Timber Harvesting

The proposed action would avoid adverse impacts to public health and safety through implementation of Forest Plan standards and guidelines, Pennsylvania best management practices, project design features, timber sale contract requirements, Office of Safety and Health Administration requirements, and standard operating safety procedures (including oil and gas development operations). Standard precautionary measures would be applied, including but not limited to signing of roads, identifying the area as an active timber sale area, safely securing truck loads, and maintaining the timber haul routes.

Heritage

Implementation is not expected to result in any adverse effects to any known historic properties. Eligible and unevaluated heritage resources for listing on the National Register of Historic Places will be protected by following the compliance process mandated by section 106 of the National Historic Preservation Act and recommendations outlined in the cultural resource report. All eligible and unevaluated sites will be protected by avoidance or other site-specific mitigations identified by the forest heritage program manager or district archaeologist.

Findings Required by Other Laws and Regulations

The proposed action complies with all applicable laws, regulations, and policies. These include the Clean Water Act, Wetlands and Floodplains Executive Orders, the Endangered Species Act, The National Historic Preservation Act, the National Environmental Policy Act, and the National Forest Management Act. The proposed action complies with all Forest Plan desired conditions, objectives, standards, and guidelines.

Archaeological Resources Protection Act

Cultural resources are briefly described elsewhere in this environmental assessment. Survey results and a cultural report are provided in district heritage records. We have consulted with tribes for this project. No tribal concerns were identified. The Forest Service is in the process of consulting with the Pennsylvania State Historic Preservation Office requesting concurrence for the Deadman Corners project.

Clean Air Act

Warren County is identified as in non-attainment for sulfur dioxide. The area of non-attainment is localized in the city of Warren, and the surrounding communities of Conewango, Glade, and Pleasant Townships. The project area is in Forest County. Project area effects from the proposed action on the attainment of National Ambient Air Quality Standards are not expected to be significant. Any effects of the proposed actions on air quality would be quickly diffused over time within the project area (USDA-FS 2007b, page 59). The amount of pollutants added to the atmosphere by equipment implementing the

proposed actions over time is not expected to exceed the National Ambient Air Quality Standards for attainment, nor is the proposed actions expected to have any effect on the sulfur dioxide non-attainment area in the vicinity of Warren, Pennsylvania.

Clean Water Act

Within the project area there are no streams or lakes on the 303(d) list. No significant effects to water quality standards are anticipated by implementing the proposed action. Compliance with the Clean Water Act on the Allegheny National Forest is achieved with the implementation of project design features, Forest Plan standards and guidelines, and Pennsylvania best management practices.

Environmental Justice (Executive Order 12898)

Responses to the public scoping request did not identify any adversely impacted local minority or low-income populations. This project is consistent with the Forest Plan (USDA-FS 2007b, pages 3-433 to 3-436).

Federal Cave Resources Protection Act

No known caves exist within the project area; therefore, there would be no effects to caves.

National Environmental Policy Act (NEPA)

This act requires public involvement and consideration of potential environmental effects. The public was provided a scoping comment period beginning on November 26, 2019. A comment period is also provided in the release of this environmental assessment. Public comments received on the project are reviewed and responded to by the interdisciplinary team and the responsible official. An objection period will be provided for the draft decision that this environmental assessment supports. A final decision would follow any direction provided by the resolution of any potential objections. Consideration of potential environmental effects are provided in this environmental assessment and project file, as well as the tiering to the Forest Plan documents. The entirety of documentation for this environmental assessment supports compliance with the NEPA.

National Forest Management Act (Forest Plan Consistency)

Implementation of the proposed action is consistent with the intent of the Forest Plan's long-term goals and objectives provided for vegetation management and conforms to other resource standards and guidelines in the Forest Plan (USDA-FS 2007a). The project would be implemented without impairing the long-term productivity of National Forest System lands through implementation of design criteria. Measures to avoid or minimize effects include project design features, Forest Plan standards and guidelines, which at a minimum, meet the requirements of applicable laws and regulations, and Pennsylvania state standards, for the affected National Forest System lands. The analysis in this environmental assessment and supporting documentation in the project file show that the proposed action is consistent with the National Forest Management Act.

Native American Graves Protection and Repatriation Act

No Native American grave sites are known nor were any identified as a result of public scoping or consultation with tribal representatives.

Floodplains (Executive Order 11988)

See Soil and Water section in this environmental assessment. This project does not propose any floodplains developments or modifications. Proposed large wood introductions would enhance floodplain function in the areas proposed for treatment. No significant effects are anticipated to floodplains in implementing the proposed action.

Wetlands (Executive Order 11990)

See Soil and Water section in this environmental assessment. This project does not propose any wetland developments or modifications. No significant effects are anticipated to wetlands in implementing the proposed action.

Wild and Scenic Rivers Act

There are no wild and scenic rivers in the area of the proposed action; therefore, there are no impacts to wild and scenic Rivers by implementing the proposed actions.

Authorities Related to Migratory Birds

The Migratory Bird Treaty Act is a criminal statute that applies to the actual or attempted hunting, taking, capturing, killing, or possession of certain migratory birds and their nests or eggs. Past court decisions have addressed the Act's application to project-level work such as the Deadman Corners project (see Sierra Club v. Martin, 110 F.3d 1551, 1555 [11th Cir. 1997]; Curry v. U.S. Forest Service, 988 F. Supp. 541, 550 [W.D. Pa. 1997]).

Executive Order 13186 was issued, in part, to ensure that environmental analyses of federal actions assess the impacts on migratory birds, and an expired Memorandum of Understanding between the U.S. Forest Service and the U.S. Fish and Wildlife Service has provided direction regarding migratory birds in the past. The effect of this project on migratory birds is discussed in the effects analysis of this environmental assessment and the wildlife specialist report. Design criteria are in place to mitigate impacts to migratory birds. The Deadman Corners project is consistent with all applicable requirements pertaining to migratory birds.

AGENCIES AND PERSONS CONSULTED

The Forest Service consulted with the individuals/organizations on the NEPA mailing list, subsurface mineral owners, Federal, State, tribal, and local agencies (listed below) during the development of this environmental assessment.

Federal, State, and Local Agencies

U.S. Fish and Wildlife Service
Pennsylvania Department of Environmental Protection
Pennsylvania Game Commission
Pennsylvania State Historic Preservation Office

Tribes

The Forest Service consulted with the 15 federally recognized Tribes that have historic ties to the area.

Absentee Shawnee Tribe of Oklahoma
Eastern Shawnee Tribe of Oklahoma
Shawnee Tribe
Cayuga Nation
Delaware Tribe Historic Preservation Representatives
Delaware Nation
Oneida Indian Nation
Oneida Nation of Wisconsin
Onondaga Nation
Seneca Nation of Indians
Seneca-Cayuga Nation
St. Regis Mohawk Tribe
Stockbridge-Munsee Mohican Tribal Historic Preservation
Tonawanda Seneca Nation
Tuscarora Nation

Others

Elk County Commissioners

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APPENDIX A: DESCRIPTION OF PROPOSED TREATMENTS, METHODS, AND TERMINOLOGY AND LIST OF TREATMENTS BY STAND

Treatment Descriptions for Vegetation Management and Reforestation

Timber Harvesting

- ***Non-commercial thinning*** is an improvement cut where poor quality, non-target species and poor vigor individuals are felled to improve the overall quality and health of a stand.
- ***Shelterwood seed cut/shelterwood removal*** is a multiple-step regeneration harvest in which approximately one-third of the overstory and midstory is removed in the initial shelterwood seed cut to provide sunlight on the ground to encourage tree seedling development. After adequate tree seedlings develop, the shelterwood removal cut follows, in which nearly all the overstory trees are removed, allowing full sunlight to reach the established seedlings.
- ***Overstory removal*** is a single step harvest that takes place after adequate tree seedlings develop. This activity removes nearly all the overstory trees, allowing full sunlight to reach the established seedlings.
- ***Two-aged seed cut / two-aged removal*** is a multiple-step partial regeneration harvest in which approximately one-third of the overstory is removed in the initial seed cut to provide sunlight on the ground to encourage tree seedling development. After adequate tree seedlings develop, the two- aged removal cut follows, in which all but 20-60 basal area per acre of the overstory trees are removed in a non-uniform manner. This creates both horizontal and vertical heterogeneity in the resulting stand.
- ***Two-aged overstory removal*** in a single step harvest after adequate tree seedlings develop, the two- aged shelterwood removal cut follows, in which all but 20-60 basal area per acre of the overstory trees are removed in a non-uniform manner. This creates both horizontal and vertical heterogeneity in the resulting stand.
- ***Commercial thinning*** treatments are designed to reduce overcrowding in overly stocked stands, thereby enhancing the growth and quality of the residual stand. No more than one-third of the trees are typically removed in a single thinning treatment.
- **G*roup selection to restore understory mature forest conditions*** is designed to accelerate the transition of even-aged hardwood stands to uneven-aged stands. It begins with a ***single-tree selection*** harvest in which approximately 30 to 40 percent of the trees are removed to increase light levels on the forest floor to promote the establishment of tree seedlings, shrubs, and herbaceous vegetation. A ***group-selection*** harvest is then implemented, typically within 3 to 15 years, to release the newly established seedlings. Group sizes range in size from one to three acres. Ideally, these treatments should be repeated every 20 to 40 years until the stand has been converted to a multi-aged condition.

Reforestation Activities

- ***Chemical site preparation (herbicide treatments)*** remove or reduce undesired understory vegetation in stands containing a dense ground cover of grasses, fern, beech root sprouts and striped maple that interfere with desired tree seedling establishment and growth. Herbicides approved for use by the Forest Plan, includes glyphosate–based products labeled for forestry use and sulfometuron methyl in the form of Oust®.

- ***Manual site preparation*** is used when mid-story trees and brush cast shade that interferes with the development of tree seedlings. Chainsaws or brush saws would be used to remove or reduce competing vegetation by felling mid-story non-preferred species to increase sunlight levels to the forest floor.

- Where deer browsing impacts are high, ***area fencing*** *and/or* ***tree shelters*** are installed and maintained to exclude deer and reduce browsing on desired seedlings. These methods allow for desirable tree seedlings to develop and grow to a competitive size and beyond the risk for deer browsing. Fences and tree shelters are removed when objectives have been met.

- ***Tree planting*** is prescribed in areas where planned natural regeneration has failed, or where it is desirable to supplement natural tree seedling establishment to improve species diversity.

- ***Release*** involves the non-commercial, manual cutting of woody vegetation that interferes with the growth and survival of desired tree seedlings, saplings, or shrubs in young stands (age class 20 years or less). Release promotes tree species diversity.

Temporary Openings Greater Than 40 Acres

In some areas, proposed regeneration harvests would create temporary openings that will exceed 40 acres in size. Our analysis will examine the effects to vegetation and other resources from the proposed temporary openings greater than 40 acres. The resulting temporary openings larger than 40 acres would ensure adequate stocking levels in stands affected by declining health of black cherry, beech bark disease complex, and other forest health concerns. As with all proposed activities, Forest Plan standards and guidelines will be followed for temporary openings created by the application of even-aged silviculture (USDA-FS 2007, page 68). The proposal to create these large openings will receive Regional Forester review and concurrence. Proposed harvest treatments would be staggered over time so that less than 25 percent of any small watershed area would be in the zero to 5-year age class at any given time.

The following list shows the combination of stands that when treated, would result in openings (areas or blocks) over 40 acres in size (please see map 7 for their locations).

Table A-1: Temporary blocks over 40 acres in size

Block	Stands	Total Acres
A	653038, 653040, 653104, 653105, (653106), (653107)	153
B	653016, 653044, 653102	109
C	653020	43
D	653014, 653092, 653116	42
E	653050, 653051, 653101, 653117, 676023, 676024, 676025 (653052), (653099),	194
F	652005, 652006, 652007, 652008, 652077, 676013, 676019, 676028, 676030, 676051, 676053, 676054, 676055, 676056, 676059, 676067	350
G	651011, 651013, 651016, 651020, 651021, 651029, 651030, 651031, 651032, 651033, 651036, 651068, 651070, 651076, 651084, (651019), (651073)	290
H	651007, 651010, 651046, 651050	139
I	650037, 650110	57
J	675041, 675042, 675043, 675044, 675048, 675066	74
K	675045, 675050, (675067)	80
L	650040, 650041, 650114, (650113)	102
M	685005	67
N	685008	85
O	675015, 675019, 675021, 675082, 675104, [657016]	141
P	689002, 689003, 689004, 689016, 689026, 689034	131
Q	688011, 688016, 688030, (689001)	90
R	687002, 687004, 687046, 687047, 688004, 688008, 688009, 688044, 688048, 688049, 688054, (687003), (688006), (688036)	347
S	653048	45
T	653030, 653065, 653066, 653073	126
U	652034, 652035	119
V	652021, 652024, 652026, 652030, 652031, 652032, 652058, 652065, 652067, 652083, 652084, 653089, 653090, [652062]	291
W	652022, 652046, 652075	64

Note: Stands without parentheses or brackets are proposed for regeneration harvest in the Deadman Corners project. Stands in ( ) are stands that were approved for regeneration harvest in other projects and have recently been cut. Stands in [ ] are stands that with were approved for regeneration harvest in other projects but have not been cut yet.

Blocks will be smaller than the acreages listed due to protected areas within individual stands. Protected areas will also be used so that blocks that appear to be touching on map 7 are not adjacent during implementation.

Proposed Silvicultural Treatments by Stand

Acronyms and abbreviations used in proposed silvicultural treatments table below

Objective

Grn = Green (emphasis on standing live trees)
Salv = Salvage (emphasis on salvage dying, diseased, or dead trees)
TSI = Timber Stand Improvement activaties (TSI activities include release)
Refor = Reforestation (reforestation activities – including herbicide, site preparation, fertilizer, fencing,
and planting; no timber harvesting)

Silvicultural Treatments (1st Entry, 2nd Entry)

STS	*Single Tree Selection*
GS	*Group Selection*
SWC	*Shelterwood Seed Cut*
SWR	*Shelterwood Removal*
TSC	*Two-age Shelterwood Seed Cut*
TSR	*Two-age Shelterwood Removal*
OR	*Overstory Removal*
THIN	*Commercial Thin*
NCT	*Non-Commercial Thinning*
CTR	*Release for Species Diversity*

Note: The six-digit stand number listed in this table consists of the compartment number (first three digits) and the stand number (last three digits). For example, stand 636001 is stand 1 in compartment 636.

Table A-2: Proposed silvicultural treatments

Stand	Objective	Management Area	Acres	1st Entry Proposed Treatment	2nd Entry Proposed Treatment	Herbicide	Site Preparation	Fence	Tree Shelters	Planting	Release
648038	TSI	3.0	44	CTR	-	44	44	-	-	-	44
650037	Salv	3.0	36	-	TSR	36	36	36	9	9	36
650038	TSI	3.0	30	CTR	-	30	30	-	-	-	30
650040	Salv	3.0	22	-	TSR	22	22	22	6	6	22
650041	Salv	3.0	28	-	TSR	28	28	28	7	7	28
650046	Salv	3.0	35	-	TSR	35	35	35	9	9	35
650110	Salv	3.0	21	-	OR	21	21	21	5	5	21
650114	Salv	3.0	30	-	TSR	30	30	30	7	7	30
651007	Salv	3.0	10	SWC	SWR	11	11	11	3	3	11
651010	Salv	3.0	35	SWC	SWR	35	35	35	9	9	35
651011	Salv	3.0	16	-	TSR	16	16	16	4	4	16

Stand	Objective	Management Area	Acres	1st Entry Proposed Treatment	2nd Entry Proposed Treatment	Herbicide	Site Preparation	Fence	Tree Shelters	Planting	Release
651013	Salv	3.0	33	-	TSR	33	33	33	8	8	33
651016	Salv	3.0	12	SWC	SWR	12	12	12	3	3	12
651020	Salv	3.0	41	-	TSR	41	41	41	10	10	41
651021	Salv	3.0	13	-	TSR	13	13	13	3	3	13
651029	Salv	3.0	16	-	TSR	16	16	16	4	4	16
651030	Salv	3.0	18	-	OR	18	18	18	4	4	18
651031	Salv	3.0	12	-	TSR	12	12	12	3	3	12
651032	Salv	3.0	15	TSR	-	15	15	15	4	4	15
651033	Salv	3.0	26	TSR	-	26	26	26	6	6	26
651036	Salv	3.0	18	OR	-	18	18	18	4	4	18
651046	Salv	3.0	52	TSR	-	52	52	52	13	13	52
651050	Salv	3.0	43	TSR	-	43	43	43	11	11	43
651068	Salv	3.0	15	TSR	-	15	15	15	4	4	15
651070	Salv	3.0	13	-	TSR	13	13	13	3	3	13
651076	Salv	3.0	5	SWC	SWR	5	5	5	1	1	5
651084	Salv	3.0	11	-	OR	11	11	11	3	3	11
652001	Salv	2.2	54	STS	GS	54	54	54	13	13	54
652005	Salv	3.0	20	-	OR	20	20	20	5	5	20
652006	Salv	3.0	42	-	OR	42	42	42	11	11	42
652007	Salv	3.0	24	TSR	-	24	24	24	6	6	24
652008	Salv	3.0	63	-	TSR	63	63	63	16	16	63
652012	TSI	3.0	20	CTR	-	20	20	-	-	-	20
652013	TSI	3.0	31	CTR	-	31	31	-	-	-	31
652021	Salv	3.0	17	-	TSR	17	17	17	4	4	17
652022	Salv	3.0	35	TSR	-	35	35	35	9	9	35
652024	Salv	3.0	36	SWC	SWR	36	36	36	9	9	36
652030	Salv	3.0	13	TSR	-	13	13	13	3	3	13
652031	Salv	3.0	13	TSR	-	13	13	13	3	3	13
652032	Salv	3.0	12	TSR	-	12	12	12	3	3	12
652033	TSI	3.0	22	CTR	-	22	22	-	-	-	22
652034	Salv	3.0	80	TSR	-	80	80	80	20	20	80
652035	Salv	3.0	39	TSR	-	39	39	39	10	10	39
652046	Salv	3.0	14	-	OR	14	14	14	4	4	14
652054	Salv	2.2	30	STS	GS	30	30	30	7	7	30
652055	Salv	2.2	41	STS	GS	41	41	41	10	10	41
652057	Salv	3.0	14	NCT	OR	14	14	14	4	4	14

Stand	Objective	Management Area	Acres	1st Entry Proposed Treatment	2nd Entry Proposed Treatment	Herbicide	Site Preparation	Fence	Tree Shelters	Planting	Release
652058	Salv	3.0	62	-	OR	62	62	62	15	15	62
652065	Salv	3.0	27	SWC	SWR	27	27	27	7	7	27
652067	Salv	3.0	23	TSR	-	23	23	23	6	6	23
652075	Salv	3.0	15	TSR	-	15	15	15	4	4	15
652077	Salv	3.0	17	-	OR	17	17	17	4	4	17
652083	Salv	3.0	45	-	OR	45	45	45	11	11	45
652084	Salv	3.0	19	-	OR	19	19	19	5	5	19
653008	TSI	3.0	19	CTR	-	19	19	-	-	-	19
653014	Salv	3.0	12	TSR	-	12	12	12	3	3	12
653016	Salv	3.0	25	TSR	-	25	25	25	6	6	25
653020	Salv	3.0	43	-	TSR	43	43	43	11	11	43
653022	Grn	3.0	14	THIN	-	14	14	14	3	3	14
653027	TSI	3.0	32	CTR	-	32	32	-	-	-	32
653030	Salv	3.0	21	SWC	SWR	21	21	21	5	5	21
653038	Salv	3.0	30	-	TSR	30	30	30	7	7	30
653040	Salv	3.0	22	SWC	SWR	22	22	22	6	6	22
653044	Salv	3.0	64	-	TSR	64	64	64	16	16	64
653048	Salv	3.0	45	SWC	SWR	45	45	45	11	11	45
653050	Salv	3.0	30	SWC	SWR	30	30	30	0	22	30
653051	Salv	3.0	20	SWC	SWR	20	20	20	5	5	20
653055	Salv	2.2	35	STS	GS	35	35	35	9	9	35
653065	Salv	3.0	25	-	OR	25	25	25	6	6	25
653066	Salv	3.0	43	TSR	-	43	43	43	11	11	43
653073	Salv	3.0	36	TSR	-	36	36	36	9	9	36
653076	Salv	2.2	19	-	TSR	19	19	19	5	5	19
653089	Salv	3.0	13	SWC	SWR	13	13	13	3	3	13
653090	Salv	3.0	6	SWC	SWR	6	6	6	1	1	6
653091	Salv	3.0	23	TSR	-	23	23	23	6	6	23
653092	Salv	3.0	12	-	OR	12	12	12	3	3	12
653101	Salv	3.0	18	TSR	-	18	18	18	5	5	18
653102	Salv	3.0	21	TSR	-	21	21	21	5	5	21
653104	Salv	3.0	24	TSR	-	24	24	24	6	6	24
653105	Salv	3.0	22	-	OR	22	22	22	5	5	22
653112	Salv	3.0	15	TSR	-	15	15	15	4	4	15
653116	Salv	3.0	18	TSR	-	18	18	18	4	4	18
653117	Salv	3.0	27	TSR	-	27	27	27	7	7	27

Stand	Objective	Management Area	Acres	1st Entry Proposed Treatment	2nd Entry Proposed Treatment	Herbicide	Site Preparation	Fence	Tree Shelters	Planting	Release
675015	Salv	3.0	36	-	TSR	36	36	36	9	9	36
675019	Salv	3.0	31	-	TSR	31	31	31	8	8	31
675021	Salv	3.0	17	SWC	SWR	17	17	17	4	4	17
675041	Salv	3.0	4	-	OR	4	4	4	1	1	4
675042	Salv	3.0	19	TSR	-	19	19	19	5	5	19
675043	Salv	3.0	18	-	OR	18	18	18	5	5	18
675044	Salv	3.0	23	TSR	-	23	23	23	6	6	23
675045	Salv	3.0	22	TSR	-	22	22	22	6	6	22
675048	Salv	3.0	4	-	OR	4	4	4	1	1	4
675050	Salv	3.0	23	-	TSR	23	23	23	6	6	23
675064	Salv	3.0	31	-	OR	31	31	31	8	8	31
675066	Salv	3.0	4	-	TSR	4	4	4	1	1	4
675082	Salv	3.0	21	SWC	SWR	21	21	21	5	5	21
675104	Salv	3.0	6	-	TSR	6	6	6	1	1	6
676005	Salv	3.0	26	-	OR	26	26	26	6	6	26
676011	Salv	2.2	22	-	TSR	22	22	22	6	6	22
676012	Salv	2.2	34	STS	GS	34	34	34	8	8	34
676013	Salv	3.0	15	SWC	SWR	15	15	15	4	4	15
676016	Salv	2.2	14	-	TSR	14	14	14	4	4	14
676017	Salv	2.2	3	STS	GS	3	3	3	1	1	3
676019	Salv	3.0	16	-	TSR	16	16	16	4	4	16
676021	Salv	3.0	4	-	TSR	4	4	4	1	1	4
676023	Salv	3.0	18	SWC	SWR	18	18	18	4	4	18
676024	Salv	3.0	11	SWC	SWR	11	11	11	3	3	11
676025	Salv	3.0	34	TSR	-	34	34	34	9	9	34
676028	Salv	3.0	15	-	TSR	15	15	15	4	4	15
676030	Salv	3.0	38	-	TSR	38	38	38	9	9	38
676031	Salv	2.2	23	STS	GS	23	23	23	6	6	23
676034	Salv	2.2	10	STS	GS	10	10	10	2	2	10
676046	Salv	2.2	13	STS	GS	13	13	13	3	3	13
676050	Salv	2.2	9	STS	GS	9	9	9	2	2	9
676051	Salv	3.0	13	TSR	-	13	13	13	3	3	13
676053	Salv	3.0	26	TSR	-	26	26	26	7	7	26
676054	Salv	2.2	15	TSR	-	15	15	15	4	4	15
676055	Salv	2.2	14	-	TSR	14	14	14	3	3	14
676056	Salv	3.0	12	-	OR	12	12	12	3	3	12

Stand	Objective	Management Area	Acres	1st Entry Proposed Treatment	2nd Entry Proposed Treatment	Herbicide	Site Preparation	Fence	Tree Shelters	Planting	Release
676058	Salv	2.2	7	STS	GS	7	7	7	2	2	7
676059	Salv	3.0	17	-	OR	17	17	17	4	4	17
676066	Salv	2.2	9	STS	GS	9	9	9	2	2	9
676067	Salv	3.0	10	-	OR	10	10	10	3	3	10
685005	Salv	3.0	67	-	TSR	67	67	67	17	17	67
685008	Salv	3.0	85	-	TSR	85	85	85	21	21	85
685010	TSI	3.0	39	CTR	-	39	39	-	10	10	39
687002	Salv	3.0	30	SWC	SWR	30	30	30	8	8	30
687003	TSI	3.0	15	CTR	-	15	15	-	4	4	15
687004	Salv	3.0	18	NCT	OR	18	18	18	4	4	18
687019	Salv	2.2	7	STS	GS	7	7	7	2	2	7
687020	Salv	2.2	14	TSC	TSR	14	14	14	3	3	14
687028	Refor	2.2	17	-	-	17	17	17	17	17	17
687029	Salv	2.2	9	SWC	SWR	9	9	9	2	2	9
687040	TSI	2.2	17	CTR	-	17	17	-	4	4	17
687046	Salv	3.0	35	-	TSR	35	35	35	9	9	35
687047	Salv	3.0	20	-	TSR	20	20	20	5	5	20
688002	Salv	3.0	22	-	TSR	22	22	22	5	5	22
688004	Salv	3.0	23	-	TSR	23	23	23	6	6	23
688008	Salv	3.0	38	-	TSR	38	38	38	9	9	38
688009	Salv	3.0	60	TSC	TSR	60	60	60	15	15	60
688011	Salv	3.0	33	-	OR	33	33	33	8	8	33
688016	Salv	3.0	34	-	OR	34	34	34	8	8	34
688018	Salv	2.2	17	STS	GS	17	17	17	4	4	17
688019	Salv	3.0	9	-	OR	9	9	9	2	2	9
688026	Salv	2.2	35	STS	GS	35	35	35	9	9	35
688030	Salv	3.0	23	SWC	SWR	23	23	23	6	6	23
688032	Salv	2.2	25	STS	GS	25	25	25	6	6	25
688044	Salv	3.0	17	-	TSR	17	17	17	4	4	17
688048	Salv	3.0	21	SWC	SWR	21	21	21	5	5	21
688049	Salv	3.0	7	-	TSR	7	7	7	2	2	7
688054	Salv	3.0	19	SWC	SWR	19	19	19	5	5	19
689002	Salv	3.0	13	SWC	SWR	13	13	13	3	3	13
689003	Salv	3.0	30	-	OR	30	30	30	7	7	30
689004	Salv	3.0	21	-	TSR	21	21	21	5	5	21
689013	Salv	3.0	16	-	TSR	16	16	16	4	4	16

Stand	Objective	Management Area	Acres	1st Entry Proposed Treatment	2nd Entry Proposed Treatment	Herbicide	Site Preparation	Fence	Tree Shelters	Planting	Release
689016	Salv	3.0	15	-	TSR	15	15	15	4	4	15
689026	Salv	3.0	9	SWC	SWR	9	9	9	2	2	9
689034	Salv	3.0	16	-	TSR	16	16	16	4	4	16

Proposed Non-native Invasive Plant Treatments

Eight non-native invasive plant species[18] of concern for the Allegheny National Forest have been documented along roads, streams, and within stands and stone pits in the project area. Non-native invasive plant treatment would occur on up to 200 acres throughout the project area using a combination of manual, mechanical, and herbicide treatments.

- **Manual treatment** could include pulling, digging, or hand-roughing.
- **Mechanical treatment** would include brush-cutting, mowing, or removal by motorized equipment.
- **Herbicide treatment** would include the use of glyphosate and would be applied in accordance with Forest Plan standards and guidelines.

These combinations of treatments could occur several times during a growing season, or over a period of several years until the infestations have been effectively treated. Due to the nature of non-native invasive plants, additional non-native invasive plant infestations could be treated if found within the project area, consistent with applicable Forest Plan direction.

Proposed Wildlife Habitat Enhancements

The project area can support a diversity of soft and hard mast producing trees and shrubs. Proposed wildlife habitat enhancements would focus on establishing mid-story and understory soft and hard mast-producing species in suitable areas for wildlife species that utilize mast. The proposed activities will supplement reforestation treatments by establishing trees and shrubs that are desirable to wildlife. The proposed plantings would not convert sites to a different vegetation type but would help these tree and shrub species to become established and flourish without further intervention.

- ***Planting*** 21 acres with native mast-producing trees and shrubs is proposed to provide future forage and cover for a variety of wildlife species.
- Installing ***fencing, cribs, or tree shelters*** is being proposed for 20 acres to protect planted trees and shrubs from deer browsing.

[18] **Japanese knotweed (***Polygonum cuspidatum),* **Common tansy** *(Tanacetum vulgare),* **Narrow-leaved cattail** *(Typha angustifolia),* **Multiflora rose** *(Rosa multiflora),* **Autumn olive** *(Elaeagnus umbellate),* **Glossy buckthorn** *(Frangula alnus),* **Common reed** *(Phragmites australis) and* **Japanese barberry** *(Berberis thunbergii)*

- Installing 30 ***wildlife structures*** (man-made) is proposed to provide nesting and roosting opportunities for cavity dwellers and other wildlife.

- ***Rehabilitating*** approximately 15 acres of wildlife openings. Rehabilitation activities may consist of herbicide application, bulldozing, lime application, fertilizer application, seeding, plowing, disking, and tilling.

- Constructing 96 ***brush piles*** is proposed across the project area. Field surveys conducted in the project area revealed a general lack of structure on the forest floor aside from widely scattered windthrown trees and large boulders. Proposed brush piles would increase the amount of escape and concealment cover for a variety of wildlife species in forested stands which, aside from the dense fern cover in summer, lack ground cover conducive to wildlife concealment on the forest floor.

Table A-3: Proposed wildlife habitat improvements

Stand	Plant (acres)	Fence (acres)	Install Structures (number)	White Pine Release (acres)	Brush Piles (number)	Opening Rehabilitation (acres)
650045					6	
650046	1	1	2			
650084			5		6	3.0
651027			1			
651038	2	2				1.1
651053						1.5
651057					6	
651060						2.7
651080						0.6
652003					6	
652022	1	1				
652063						2.1
652066	1	1				
652071	1	1				
652080					6	
653014					6	
653046			5			3.0
653048					6	
653066					6	
653102	2	2	3			
653112					6	
653116					6	
675039					6	
676039					6	
676045	3	3	5			
676055	1	1				
676057					6	
676062						1.4
676064					6	
676066	1					
687032					6	
687052	2	2				
688007	4	4	5		6	
688026				35		
688033			2			
688034			2			
689019	2	2				
Totals	**21**	**20**	**30**		**96**	**15.4**

Proposed Aquatic Habitat and Water Quality Treatments

***Aquatic habitat treatments*:** To improve stream function and create aquatic habitat, large wood structures would be added to streams and floodplains within the project area. These structures divert excess streamflow onto the floodplain which in turn increases groundwater infiltration, buffers against high flows, and decreases the risk of downstream flood damage.

The structures also alter flow patterns, creating pools that provide critical resting places for fish.

This project proposes to fell up to 160 trees per mile into streams and floodplains (see map 6). Trees would be felled within the riparian area where large woody debris is lacking in streams, and trees are available to be felled without significantly reducing stream shading or bank stability. Trees will be arranged in structures that are stable in the stream and floodplain.

This project also proposes to retrofit a culvert to improve aquatic organism passage, where forest road 222 crosses an unnamed tributary to Bluejay Creek (see map 6). The culvert at this crossing is a corrugated metal pipe arch in good condition. However, there is a drop from the culvert outlet to the stream that restricts passage for most fish and aquatic species. To address this, grade control structures would be constructed of rock and logs and placed within 50 feet of the culvert outlet. These grade controls would raise the water level eliminating the outlet drop and keeping streambed material within the culvert.

Table A-4: Proposed aquatic habitat treatments locations

Treatment	Stream Miles
Level 1 - Fell trees into streams.	19.5
Level 2 - A combination of felling trees into streams and moving the logs and tops with a grip hoist/other equipment to build stable structures in the stream.	3.5
Level 3 – Uprooting trees using a grip hoist or winch	0.3
Level 3 – Excavator: Install bank stabilization structure	150 feet
Retrofit aquatic organism passage culvert at stream crossing on forest road 222	50 feet
Total	**23.3**

Proposed Recreation Improvements

There are no developed facilities, no viewpoints, and very few dispersed campsites, none of which need improvement, within the project area. Therefore, we are not proposing any recreational improvements with the Deadman Corners project area. All snowmobile trails within the project area are located on existing roads (Abraxas Road, Job Corps Road, forest road 221, forest road 221B) and the Penoke Bike Trail east of Blue Jay Road [abandoned railroad grade]). The proposed Marienville ATV Connector trail will cross the southern portion of the project area when it is constructed.

Proposed Transportation Management

The project area contains approximately 170 miles of roads – 44 miles of National Forest System roads, 15 miles of State and Township roads, 111 miles of non-system roads, primarily oil and gas access roads. The National Forest System roads are managed for public motor vehicle use as follows: 5 miles are open year-round, 19 miles are seasonally restricted, and 20 miles are closed year around. The project area contains 11 miles of mixed-use roads (roads being used as both roads and trails; 4.5 miles of forest roads and 6.5 miles of municipal roads), includes 0.3 miles of the Penoke Off-Highway Motorcycle Trail and 10.7 miles of the Allegheny Snowmobile Loop and connectors.

A safe and efficient transportation system is critical in meeting the diverse needs of the public and managers of the Allegheny National Forest. As a result of the transportation analysis process mandated by Subpart A of the Travel Management Rule, recommendations found in the Salmon Creek (2015) and Sheffield Junction (2105) Travel Analysis Projects, identify the most ecologically, economically and socially sustainable transportation system in terms of access for recreation, research and other land management activities. The Salmon Creek and Sheffield Junction Travel Analysis Projects include recommendations within the Deadman Corners Project planning area. This project will consider, analyze, and make a decision considering those recommendations.

Management of the transportation system within the project area is needed to facilitate stands proposed for vegetation management over the life of the project. Approximately 6.7 miles of roads are proposed to be added to the Forest Service transportation system. Approximately 5.5 mile are existing non-system roads (not municipal or part of the National Forest Service Road system) and approximately 1.2 miles involve road construction using new corridors. Decommissioning (full obliteration) is proposed for forest road 223B (0.7 miles) because it is not needed for current and future management of National Forest System lands. High quality road surfacing (limestone) is proposed for approximately 11.2 miles of road in areas adjacent to or near stream courses to reduce the risk of sedimentation. Six existing undersized culverts are proposed for replacement with properly sized culverts to allow for aquatic organism passage (see map 5). Approximately 0.5 miles of forest road 218A (from the intersection with forest road 218 to the intersection with forest road 214) are being proposed to be changed from “closed” to “open” to provide access for hunting.

Table A-6: Transportation proposals

Road Activity	Total Mileage	Proposed/Existing Road Numbers (Miles)			
Road construction – new corridor	1.2	128J extension			0.2
		221E			0.4
		286 extension			0.6
Add existing non-system road corridor to the National Forest Transportation System (which may involve road reconstruction, construction, or realignment)[1]	5.5	128J extension			0.2
		128L			0.1
		128M			0.1
		128N			0.2
		217B			0.3
		218C			0.4
		219F			1.7
		219FA			0.4
		220A extension			0.3
		221D			0.6
		221E			0.3
		223C			0.2
		223D			0.4
		286 extension			0.3
Road decommissioning	0.7	223B			0.7
Road maintenance on potential timber haul roads	41	Various National Forest System roads			
New gate installation	5 gates	128L, 218A (move), 219, 223C, and 223D			
Replace undersized culverts to provide for aquatic organism passage	6	219 (2), 221, 286, 375B, 683			
Road management changes	0.5	Road Number	Existing Status	Proposed Status	Miles
		218A	Closed	Open	0.5

Road Activity	Total Mileage	Proposed/Existing Road Numbers (Miles)	
High quality road surfacing	11.2	128G	0.1
		128I	0.4
		217	0.5
		217C	0.1
		218	0.3
		219	0.8
		220	0.1
		221C	0.1
		Proposed 221D	0.5
		222	1.7
		222D	0.1
		223	1.3
		286	0.4
		375	2.3
		375A	0.4
		375Aa	0.1
		375B	0.1
		389	0.1
		392	0.7
		392A	0.1
		683	1.0

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APPENDIX B: PROJECT DESIGN FEATURES

All design criteria in the Allegheny National Forest Land and Resource Management Plan (or Forest Plan) (USDA FS 2007, pages 53–99; 106–115) apply to federal actions on the Allegheny National Forest[19]. The proposed action has been designed to be implemented in accordance with Forest Plan forest-wide, Management Area 2.2 and Management Area 3.0 standards and guidelines (USDA-FS 2007, pages 109–115). The Forest Plan is located on the Allegheny National Forest website at: https://www.fs.usda.gov/detail/allegheny/landmanagement/planning/?cid=stelprdb5044083.

Project design features are highlighted applications of the Forest Plan standards and guidelines. A design feature clarifies, where necessary, how these standards and guidelines may apply to specific activities in the action alternatives.

Soil and Water

- On those portions of each stand with group 2 and 3 soils, cutting and skidding are permitted during dry or frozen conditions or during the normal operating season using equipment meeting low ground pressure requirements **(USDA-FS 2007, page 73)**.
- Portions of stands **687019, 687020**, and **688018** contain historic landslides, which could be susceptible to mass movement. Heavy equipment use on slopes greater than 15 percent with soils susceptible to mass movement should occur when soils are dry **(USDA-FS 2007, page 72).**
- Limestone surface armoring of roads (at stream crossings) shall be applied on planned timber haul routes prior to timber hauling **(USDA-FS 2007, page 75)**.
- In the following small watersheds, timber harvests shall be staggered to ensure that no more than 25 percent of any of these watersheds would be in the 0 to 5 year age class at any point during implementation of the project and that no more than 25 percent of the basal area within any of these watersheds would be removed in any five year period during implementation of the project (see map 8) **(USDA-FS 2007, page 74)**.
    - **Bald Hill Run Unnamed Tributary 1**
    - **Bald Hill Run Unnamed Tributary Upper**
    - **Hastings Run Tributary 1**
    - **Rocky Run Tributary 1**
    - **Rocky Run Upper Shed**
    - **Tionesta Creek Tributary 2**
    - **West Branch Bluejay Creek Tributary 1**
    - **West Branch Bluejay Creek Tributary 2**
    - **West Branch Bluejay Creek Tributary 3**
    - **West Branch Bluejay Creek Tributary 4**
    - **West Branch Bluejay Creek Tributary 5**
    - **West Branch Bluejay Creek Tributary 7**
    - **West Branch Bluejay Creek Tributary 8**

Non-native Invasive Plant Species

[19] Deviation from Forest Plan standards require an amendment to the Forest Plan. No amendments are proposed for this project. Deviations from Forest Plan guidelines are not planned for this project. If deviation from a guideline is needed during implementation, the deviation will be documented in the project file.

- Any areas proposed for ground disturbance that were not surveyed for target plants will be surveyed prior to the disturbance and conducted during the appropriate time of year when plants are identifiable to species **(USDA-FS 2007, page 89)**.
- Native, local genotype seeds/plants will be used in restoration **(USDA-FS 2007, page 53)**.
- In order to reduce the potential for introduction or spread of non-native invasive plant species, certified weed-free straw will be used for erosion control **(USDA-FS 2007, page 53)**.
- In order to reduce the potential for introduction or spread of non-native invasive plant species, an equipment cleaning provision will be included in timber sale and other contracts **(USDA-FS 2007, page 53)**.
- Skid trails and landings will be placed in weed free areas (if possible) **(USDA-FS 2007, page 53)**.
- If any regional forester sensitive species, federally listed, or plant species with a viability concern is identified prior to or during project implementation, project actions will cease and the district botanist will be notified to determine potential impacts/effects and mitigation measures **(USDA-FS 2007, page 89)**.

Wildlife, Botany, and Regional Forester Sensitive Species

- In the event a northern long-eared bat hibernacula or roost tree is discovered the interim 4d rule conservation measures below will be implemented. In addition, the conservation measures in the R9 Programmatic BA will be implemented. Appropriate Forest Plan standard and guidelines on pages 74 to 82 will be implemented. This include standards and guidelines on pages 81 to 82 and 88 for all bat species **(USDA-FS 2007).**

  R9 Programmatic Biological Assessment Conservation Measures:

  - Designate caves and mines that are occupied by bats as smoke-sensitive targets. Avoid smoke entering these hibernacula when bats are present.
  - Within 0.25 miles of known, occupied northern long-eared bat hibernacula, timber harvest will be designed to maintain, enhance, or restore swarming, staging, roosting, and foraging habitat. The future desired condition is that these areas will feature structurally complex, resilient forest communities with a continuous supply of snags, culls, cavities, and other quality roosts.
  - Application of herbicides and other pesticides should be planned to avoid or minimize direct and indirect effects to known, occupied threatened, endangered, or sensitive bat hibernacula and maternity roosts.
  - Before old buildings, wells, cisterns, and other man-made structures are structurally modified or demolished, they will be surveyed for bats. If an occupied threatened, endangered, or sensitive bat roosting is found, demolition or modification of these structures will not occur when bats are present and the need for alternative roosts will be evaluated.
  - Avoid cutting or destroying known, occupied northern long-eared bat maternity roost trees unless they are an immediate safety hazard.

  - Where needed to provide drinking sources for bats, create small wetlands or water holes.

- Avoid and protect milkweed encountered in herbaceous openings, along ditchlines/roads, and abandoned well sites when harvesting timber or spraying herbicide. Include milkweed seed/plugs in selected herbaceous opening rehabiltation in the proposed action. Regulate timing of future mowing and prescribe burning to enhance optimum milkweed growing conditions in selected herbaceous openings **(USDA-FS 2007, pages 80–81).**
- In all **silvicultural treatments proposals** reserve or protect all known apple trees, crabapples, and native shrubs to the degree possible **(USDA-FS 2007a, page 65)**.
- In all **silvicultural treatments**, do not cut any eastern white pine, except for operational trees (safety) **(USDA-FS 2007, page 65)**.
- In **all silvicultural treatments in Management Area 2.2,** do not cut eastern hemlock greater than 18 inches in diameter at breast height **(USDA-FS 2007, page 65)**.
- In **all silvicultural treatments in Management Area 3.0,** retain large eastern hemlock for seed and wildlife habitat **(USDA-FS 2007, page 65)**.
- In all **aquatic treatment proposals,** do not cut, fell, or damage mast producing trees, such as oak, cucumbertree, and apple, or soft mast producing shrubs. Other deciduous trees will be the primary choice of tree for felling while ensuring a deciduous component remains on site as a seed source. Do not cut/fell or damage conifers greater than 18 inches in diameter at breast height or any white pine. Conifers (excluding white pine) will only be cut/fell where they make up a more than 60 percent of the tree canopy and where they are necessary for the structure and function of the aquatic treatment. In remaining areas, do not cut or fell conifer, except for operational trees (safety) **(USDA-FS 2007, page 65)**.
- In all **aquatic treatment proposals,** native plant and shrub communities will be protected/buffered from all aquatic treatments **(USDA-FS 2007, page 65)**.
- In all **road decommission treatments** when implemented protect native vegetation to the degree possible. This includes but is not limited to native plants, shrubs, and trees, and wildlife habitat components of conifer, apple trees, and aspen **(USDA-FS 2007, page 65)**.
- In all **wildlife opening rehabilitation treatments** (existing herbaceous openings), protect existing apple trees, native shrubs, fences, and other wildlife structures. Consult with wildlife biologist prior to locating harvest skid trails or landings in openings. Maintain access to all openings. All disturbed/impacted areas will be rehabilitated back to their existing condition **(USDA-FS 2007, page 81)**.
- In all **aquatic treatment proposals,** avoid felling/damaging any trees which contain cavities (**USDA-FS 2007, page 80)**.
- In all **aquatic treatment proposals,** in order to avoid disturbance to nesting raptors or herons, and to avoid felling trees which may contain nests, it is recommended that personnel conducting tree-felling activities remain attentive by scanning the upper canopy of trees to be felled as well as adjacent trees for nests and also by listening/watching for bird species which may show signs of distress/agitation due to proximity to active nests/territories. Furthermore, based on time of year (nesting

season) it is recommended that work be tentatively discontinued in areas where wildlife species have been observed exhibiting this behavior (**USDA-FS 2007a, pages 85–86, 88)**.

- In all **brush pile construction** activities, avoid felling or damaging snags and other trees which may contain cavities (**USDA-FS 2007a, page 82).**
- Implementation of **transportation proposals** including road construction, reconstruction and decommissioning and **aquatic treatment proposals** will not occur until the sites which will be disturbed are identified and surveyed for potential wildlife habitat attributes. Before implementation occurs, these sites will be surveyed by a biologist, botanist and/or biological technician **(USDA-FS 2007, page 89)**.

Heritage

- Site-specific heritage design features are not listed due to the confidential nature of the information. Standards and guidelines for heritage resources are listed in the Forest Plan and Deadman Corners Cultural Resource Report. Appropriate heritage resource personnel will be contacted prior to formalizing any sale or implementation contract or other resource treatments involving ground disturbing activities to include any design features to heritage sites in contracts or agreements **(USDA-FS 2007, page 62)**.
- In any contract or agreement, the following statement will be included, as appropriate: If any previously unknown or unrecorded sites are found during project implementation, any ground disturbing activity will cease, and the appropriate heritage resource personnel notified. A heritage resource specialist will evaluate the situation and determine the proper course of action **(USDA-FS 2007, page 62)**.

Scenery and Recreation

- Along concern level 1 and 2 travel ways (state routes 666 and 1003 (Blue Jay Road), township roads 358 (Beaver Meadows Road), 371 (Job Corps Road), and 373 (Watson Farm Road). the Allegheny Snowmobile Loop (Connectors #9, #11, and #28), and the Penoke Bike Trail), leave ¼ acre buffer areas or feather edges of openings, as needed **(USDA-FS 2009, pages 7–8).**
- Log landings shall incorporate screening when viewed from a concern level 1 or 2 travel ways (state routes 666 and 1003 (Blue Jay Road), township roads 358 (Beaver Meadows Road), 371 (Job Corps Road), and 373 (Watson Farm Road), and the Allegheny Snowmobile Loop (Connectors #9, #11, and #28)) and be rehabilitated to mimic natural openings **(USDA-FS 2009, pages 7–8).**
- Along concern level 1 and 2 travel ways (state routes 666 and 1003 (Blue Jay Road), township roads 358 (Beaver Meadows Road), 371 (Job Corps Road), and 373 (Watson Farm Road), and the Allegheny Snowmobile Loop (Connectors #9, #11, and #28)), slash shall be pulled back 50 feet from the edge of the road or trail, and for an additional 50 feet, slash shall be lopped and scattered to a depth of 3 feet. Treatment should be accomplished within one year of harvesting **(USDA-FS 2009, pages 7–8).**
- All stumps within 50 feet of and visible from state routes 666 and 1003 and township road 358 shall be flush cut **(USDA-FS 2009, pages 7–8).**

- Along the Penoke Bike Trail, the proposed Marienville ATV Connector, and the Allegheny Snowmobile Loop, felling, skidding, stacking, and hauling should not occur on weekends or holidays during the appropriate recreation use season. This is defined as between May 20th to September 30th for the Penoke Bike Trail and proposed Marienville ATV Connector Trail (summer season) and December 20th to April 1st for the Allegheny Snowmobile Loop (Connectors #9, #11, and #28), (winter season) **(USDA-FS 2007, pages 60–62)**.
- As a part of timber sale agreements, require commercial operators to post warnings of heavy truck traffic on open forest roads and post trail closures at those unit boundaries where trails enter a stand being actively worked **(USDA-FS 2007, pages 60–62)**.
- Crossing of trails by equipment and materials will be kept to the minimum necessary to accomplish the project objectives, and equipment and materials should not intrude upon the trail corridor when not in use **(USDA-FS 2007, pages 60–62)**.
- Tops felled into the trail corridor will be removed by the contractor and trail tread through any trail crossing will be repaired to a firm, dry surface **(USDA-FS 2007, pages 60–62)**.

LITERATURE CITED

USDA-Forest Service. 2007. Allegheny National Forest Land and Resource Management Plan and Record of Decision. Warren, PA.

U.S. Department of Agriculture, Forest Service. 2009. Allegheny National Forest Scenery Implementation Guide, Version 1.2, Warren, PA.

APPENDIX C: EFFECTS RESOLVED THROUGH PROJECT DESIGN

The effect of heavy equipment operation on the introduction and spread of non-native invasive plants.

Heavy equipment may transport seeds from one area to another and the soil disturbance during operations may create suitable growing conditions for non-native invasive species.[20] These concerns are evaluated in greater detail in the Forest Plan Final Environmental Impact Statement, which concludes that removing varying amounts of overstory trees could improve growing conditions for shade intolerant non-native invasive plant species, but because of the temporary nature of the openings this is expected to be a short-term effect.[21] To resolve potential effects, a number of design criteria will be applied. Some of these are briefly summarized below, with additional detail provided in appendix B and the Forest Plan (USDA-FS 2007a, pages 53–54).

- Standard contract clauses will require equipment inspection and cleaning prior to off-road use on National Forest System lands (USDA-FS 2007, page 53).
- Native, local genotype seeds/plants will be used in restoration (USDA-FS 2007, page 53).
- In order to reduce the potential for introduction or spread of non-native invasive plant species, certified weed-free straw will be used for erosion control (USDA-FS 2007, page 53).
- Skid trails and landings will be placed in weed free areas (if possible) (USDA-FS 2007, page 53).

The effect of timber harvesting on intermediate or poorly drained soils.

Intermediate or poorly drained soils may be compacted or rutted by the heavy equipment used during timber harvesting. These concerns are evaluated in greater detail in the Forest Plan Final Environmental Impact Statement, which concludes that these areas will usually be small enough and scattered so infiltration and tree growth at the stand scale will not be detrimentally impacted.[22] To resolve potential effects, several design criteria will be applied. Some of these are briefly summarized below, with additional detail provided in appendix B and the Forest Plan (USDA-FS 2007a, pages 72–74.

- Timber harvesting and other heavy equipment operation are restricted to dry or frozen conditions, perennially wet areas will be avoided, and low ground-pressure equipment will be used as appropriate. If these mitigations are insufficient, then the use of heavy equipment will be avoided (USDA-FS 2007a, page 73).
- On soils susceptible to mass movement when loaded, excavated, or wet, use of heavy equipment on slopes greater than 15 percent would only occur when soils are dry. If

[20] Increased light may penetrate the soil, allowing seeds previously stored in the seedbank to germinate and grow.
[21] See Forest Plan Final Environmental Impact Statement pages 3-292 to 3-293, which are incorporated by reference.
[22] See Forest Plan Final Environmental Impact Statement pages 3-10, 3-14, 3-15, which are incorporated by reference.

the risk of landslides during these periods of concern cannot be mitigated, activities will be prohibited (USDA-FS 2007a, page 72).

The effect of timber harvesting on soil nutrient concentrations.

Timber harvesting results in the removal of nutrients stored in trees, which could result in impacts to the nutrient cycle. These concerns are evaluated in greater detail in the Forest Plan Final Environmental Impact Statement, which concludes that timber harvesting has minimal impact on soil nutrient levels.[23] To resolve potential effects, several design criteria will be applied. Some of these are briefly summarized below, with additional detail provided in the Forest Plan. (USDA-FS 2007a, pages 72–74)

- To maintain soil nutrients, avoid whole tree harvesting and leave slash from harvest operations where felled. Slash may be used to reduce compaction by driving over the slash in the skid trails, but all slash should remain in the unit and should not be hauled to the landing (USDA-FS 2007a, page 73).
- If tree tops are hauled to the landing, the slash will be returned to the unit and scattered throughout (USDA-FS 2007a, page 73)
- In areas of partial or final timber harvest, scattered tree tops and branches (slash) should be left where felled throughout the stand. A minimum of one 12 inch or greater diameter at breast height log (minimum of 8 feet long) per acre should be left in final harvest units (USDA-FS 2007a, page 80).

The effect of herbicide application on soil and water.

Herbicide has the potential to affect soil nutrient concentrations and may enter streams during periods of rain and storm events. These concerns are evaluated in greater detail in the Forest Plan Final Environmental Impact Statement, which concludes that stream chemistry, soil nutrients, microorganisms, and productivity will not be adversely affected due to a combination of treatment methods and buffer distances.[24] To resolve potential effects, several design criteria will be applied. Some of these are briefly summarized below, with additional detail provided in the Forest Plan (USDA-FS 2007a, pages 54–59).

- Herbicides proposed in this project include glyphosate and sulfometuron methyl. Glyphosate binds readily to soils becoming relatively immobile, so there is limited potential for residual effects or effects to soil nutrients. Sulfometuron methyl herbicide is more mobile in soil than glyphosate but has a short half-life in acidic soils. Although listed as "inhibitory" for some soil fungi and bacteria, it is broken down by water and microorganisms and has an expected half-life of approximately three weeks when applied on the Allegheny.
- To minimize the need for re-treatment, foliar herbicide application should not occur when rain is anticipated within four hours at the treatment site (USDA-FS 2007a, page 55).

[23] See Forest Plan Final Environmental Impact Statement pages 3-11 to 3-16, which are incorporated by reference.

[24] See Forest Plan Final Environmental Impact Statement pages 3-12 and 3-14; and Appendix G, pages G1-42 to G1-44 and G1-104, and G1-106, which are incorporated by reference. See also Allegheny National Forest FY 2008– FY 2013 Monitoring and Evaluation Report pages 185 to 191.

- Application rates are limited, and waterways will be buffered (see appendix B and Forest Plan for details) (USDA-FS 2007a, pages 57–58).

The effect of road construction, reconstruction, and maintenance on water.

Transportation management activities may affect both water quality and water quantity. These concerns are evaluated in greater detail in the Forest Plan Final Environmental Impact Statement, which concludes proper road design will avoid changes to surface and subsurface flow.[25] To resolve potential effects, several design criteria will be applied. Some of these are briefly summarized below, with additional detail provided in appendix B and the Forest Plan.

- New road construction, road reconstruction, and hauling on roads within 300 feet of streams have the greatest potential for adverse effects to water quality and water quantity.
- The proposed action includes 1.2 miles of new road construction utilizing new corridors. This is not expected to cause changes to water quality as none of the proposed new road construction utilizing new corridors would be within 300 feet of streams.
- Limestone will be placed on roads within 300 feet from streams to reduce sediment loads (USDA-FS 2007a, page 75).

The effect of proposed activities on climate change and carbon sequestration.

The effects of the project level treatments are not discernible at the level of global climate because of the many intervening variables that are outside the control of the Forest Service at the project level. A report that estimates baseline carbon stocks in forests and harvested wood products for National Forest system units (USDA-FS 2015) determined that total forest ecosystem carbon (in all seven pools) stored in the Eastern Region slowly increased rapidly between 2005 and 2013. The Allegheny National Forest is specifically mentioned as a unit in which total forest ecosystem carbon increased during that time. Forest management that generates long-lived wood products, such as lumber and furniture, transfer ecosystem carbon to the harvested wood products pool where carbon remains stored and not contributing to net greenhouse gas emissions (USDA-FS 2015). Harvested wood products from project activities would sequester carbon, and the project area would continue to sequester carbon as new growth becomes established. This would help offset any greenhouse gas emissions that may occur in the project area and elsewhere in the Allegheny National Forest. Proposed activities are within the scope of the current Forest Plan. Under the Forest Plan, the cumulative effects of management activities and projects thus far have resulted in an increasing trend in carbon sequestration on the Allegheny National Forest, as indicated by the report completed in 2015 (USDA-FS 2015). Additional detailed analysis at the project level is unlikely to alter or enhance the outcome of this report. Potential effects of proposed activities on climate change are very small as indicated by its potential annual contribution to forest-wide greenhouse gas emissions.

[25] See Forest Plan Final Environmental Impact Statement, pages 3-38, 3-39, 3-44, and 3-45, which are incorporated by reference.

A project level carbon assessment has been completed for the Deadman Corners project. In summary, the Deadman Corners project affects a relatively small amount of forest land and carbon on the Allegheny National Forest and might temporarily contribute an extremely small quantity of greenhouse gas emissions relative to national and global emissions. Except for proposed road construction, the proposed action would not convert forest land to other non-forest uses, thus allowing any carbon initially emitted from the proposed action to have a temporary influence on atmospheric greenhouse gas concentrations, because carbon would be removed from the atmosphere over time as the forest regrows. Effects from proposed road construction would be offset somewhat over time by proposed road decommissioning. Furthermore, the proposed project would transfer carbon in the harvested wood to the product sector, where it may be stored for several decades and substitute for more emission intensive materials or fuels. This proposed action is consistent with internationally recognized climate change adaptation and mitigation practices.

Also, proposed regeneration harvests would not occur until there is adequate advanced regeneration (seedlings and saplings) present to ensure the growth of a new stand of trees; therefore, trees are always present on-site storing carbon and removing pollutants from the air.

The following design criteria also help to mitigate the effects of timber harvesting and temporary openings greater than 40 acres in size.

- In all harvest systems and forest types, retain a component of healthy trees of species, which are minor components of a stand, particularly mast producers (USDA-FS 2007a, page 65).
- In timber harvest units, retain low-growing, flowering, and fruiting trees and shrubs unless their presence would preclude adequate regeneration of the desired tree species. … Where necessary to remove low growing, flowering, fruiting trees or wild grape, ensure a component is retained within the stand and on the landscape (USDA-FS 2007a, page 65).
- In intermediate cuttings and the first entry of a regeneration sequence (e.g. a shelterwood seed cut or transition cut) retain good quality seed trees of diverse species representative of the existing stand and desired in the next stand. Preserve seed sources of scarce species and strive for uniform spacing among residuals whenever possible (USDA-FS 2007a, page 65).
- Retain hemlock and white pine in stands, particularly in winter ranges, where it provides habitat for species with viability concerns, or where it is a minor component on the landscape. Where desirable to regenerate a forested stand, and it is necessary to remove hemlock or white pine, ensure a component is retained within the stand (>15 feet of basal area/acre) and on the landscape (USDA-FS 2007a, page 65).
- To provide thermal cover and habitat diversity, maintain a rhododendron, white pine and mountain laurel component in harvest units where they currently occur (USDA-FS 2007a, page 65).

- To maintain soil nutrients, avoid whole tree harvesting and leave slash from harvest operations where felled. Slash may be used to reduce compaction by driving over the slash in the skid trails, but all slash should remain in the unit and should not be hauled to the landing (USDA-FS 2007a, page 73).

- In areas of partial or final harvest, scattered treetops and branches (slash) should be left where felled throughout the stand. A minimum of one 12 inch or greater DBH log (minimum of 8 feet long) per acre should be left in final harvest units (USDA-FS 2007a, page 80).

- In all timber harvest units, one-quarter acre within each 5 acres of harvest should be set aside as reserve areas. Layout of reserve areas should emphasize the following: vernal ponds, wet depressions, unique plant communities, rock complexes, den trees, snags, conifers, mast-producing species, and tree or shrub species that are a minor component of the stand (USDA-FS 2007a, page 80).

- Where they occur, up to five den trees per acre greater than 20 inches DBH should be retained. Den trees exhibit at least one noticeable cavity. Trees with the largest cavity receive the highest retention priority (USDA-FS 2007a, page 80).

- Staggering timber harvests within the small watersheds within the project area to ensure that no more than 25 percent of any of these small watersheds will be in the 0 to 5 year age class at any point during implementation of the project and that no more than 25 percent of the basal area within any of these watersheds will be removed in any five year period during implementation of the project;

- Applying mitigation measures that break up contiguous openings, such as stream and other resource buffers (USDA-FS 2007a); and

- Other actions that reduce opening size due to operability or other resource concerns (USDA-FS 2007a).

LITERATURE CITED

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